

STIC Search Report

EIC 1700

STIC Database Tracking Number: 196863

TO: Dawn Garrett
Location: REM 10C79
Art Unit : 1774
August 1, 2006

Case Serial Number: 10/804788

From: Ross Shipe
Location: EIC 1700
REMSSEN 4B31
Phone: 571/272-6018
Ross.Shipe@uspto.gov

Search Notes

Examiner Garrett:

Please review the attached search results.

I broke the results into three groups.

The first group is claim 47 and claim 21 are together which starts on page 3.

The second group is claim 47 which starts on page 133.

The third group is claim 21 which starts on page 210.

If you have any questions or if you would like to refine the search query, please feel free to contact me at any time.

Thanks you for using EIC 1700 search services!

Ross Shipe (ASRC)
Technical Information Specialist

JUL 28 2006

SEARCH REQUEST FORM

Scientific and Technical Information Center

Pat. & T.M. Office

Requester's Full Name: DAWN GARRETT Examiner #: 76107 Date: 7/28/06
Art Unit: 1774 Phone Number 2-1523 Serial Number: 10/804,788
Mail Box and Bldg/Room Location: Room 10C79 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ELECTROLUMINESCENT DEVICE

Inventors (please provide full names): (see Bib Sheet)

Earliest Priority Filing Date: 3/19/2004 (Do not limit by date)

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

A Please search
formula (11) (see cl. 47)

R1001 through R1013 are alkyl groups

B Please search Formulas
4-1 and 4-2 (see cl. 21)

where Ar801 - Ar803 are aryl groups
R801 - R827 are alkyl groups

C Also search answers A + B together

D Combine answers from C with terms (phosphorescent) or

STAFF USE ONLY

| | | |
|--|------------------------|---|
| Searcher: <u>RIS</u> | Type of Search | Vendors and cost where applicable <u>(organo-metal)</u> |
| Searcher Phone #: | NA Sequence (#) | STN |
| Searcher Location: | AA Sequence (#) | Dialog |
| Date Searcher Picked Up: | Structure (#) <u>2</u> | Questel/Orbit |
| Date Completed: <u>8/10/06</u> | Bibliographic | Dr. Link |
| Searcher Prep & Review Time: <u>30</u> | Litigation | Lexis/Nexis |
| Clerical Prep Time: | Fulltext | Sequence Systems |
| Online Time: <u>186</u> | Patent Family | WWW/Internet |
| | Other | Other (specify) |



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Bib Data Sheet

CONFIRMATION NO. 7727

| | | | | |
|--|---|----------------------------------|---|--|
| SERIAL NUMBER 10/804,788 | FILING OR 371(c) DATE 03/19/2004 RULE | CLASS 428 | GROUP ART UNIT 1774 | ATTORNEY DOCKET NO. KOT-0093 |
| APPLICANTS Yoshiyuki Suzuri, Tokyo, JAPAN; Hiroshi Kita, Tokyo, JAPAN; Tomohiro Oshiyama, Tokyo, JAPAN; Mitsuhiro Fukuda, Tokyo, JAPAN; Noriko Ueda, Tokyo, JAPAN; | | | | |
| ** CONTINUING DATA ***** | | | | |
| ** FOREIGN APPLICATIONS ***** JAPAN JP2003-085023 03/26/2003 | | | | |
| IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 06/01/2004 | | | | |
| Foreign Priority claimed <input type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after met Allowance Verified and Acknowledged <u>Examiner's Signature</u> <u>Initials</u> | | STATE OR COUNTRY JAPAN | SHEETS DRAWING 3 | TOTAL CLAIMS 56 |
| | | | | INDEPENDENT CLAIMS 2 |
| ADDRESS CANTOR COLBURN LLP 55 Griffin Road South Bloomfield, CT06002 | | | | |
| TITLE Organic electroluminescent element, illuminator, and display | | | | |
| FILING FEE RECEIVED 1418 | FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following: | | <input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit | |

=> d his full

(FILE 'HOME' ENTERED AT 12:15:51 ON 01 AUG 2006)

FILE 'REGISTRY' ENTERED AT 12:16:31 ON 01 AUG 2006

L9 STRUCTURE
L10 50 SEA SSS SAM L9
L11 4904 SEA SSS FUL L9
 SAV L11 GAR788/A
L12 STRUCTURE
L13 50 SEA SUB=L11 SSS SAM L12
L14 4618 SEA SUB=L11 SSS FUL L12
 SAV L14 GAR788A/A
L15 286 SEA ABB=ON PLU=ON L11 NOT L14

FILE 'HCAPLUS' ENTERED AT 14:07:34 ON 01 AUG 2006
L16 2405 SEA ABB=ON PLU=ON L14
L17 234 SEA ABB=ON PLU=ON L15
L18 45 SEA ABB=ON PLU=ON L16 AND L17
L19 155 SEA ABB=ON PLU=ON L16 (L) PHOSPHORESCEN?
L20 60 SEA ABB=ON PLU=ON L16 (L) PHOSPHORESCEN? (L) ?LUMINESCE
 N?
L21 155 SEA ABB=ON PLU=ON L19 OR L20
L22 30 SEA ABB=ON PLU=ON L21 AND PHOTOCHEM?/SC,SX
L23 4 SEA ABB=ON PLU=ON L17 (L) PHOSPHORESCEN?
L24 117 SEA ABB=ON PLU=ON L17 (L) ?LUMINESCEN?
L25 118 SEA ABB=ON PLU=ON L23 OR L24
L26 104 SEA ABB=ON PLU=ON L25 AND DEV/RL
L27 104 SEA ABB=ON PLU=ON L25 AND DEV/RL AND USES/RL
L28 36 SEA ABB=ON PLU=ON L27 AND PHOTOCHEM?/SC,SX
L29 28 SEA ABB=ON PLU=ON L22 NOT L28
L30 8 SEA ABB=ON PLU=ON L18 (L) PHOSPHORESCEN?
L31 8 SEA ABB=ON PLU=ON L18 AND PHOSPHORESCEN?
L32 28 SEA ABB=ON PLU=ON L18 AND PHOTOCHEM?/SC,SX
L33 30 SEA ABB=ON PLU=ON L30 OR L31 OR L32
L34 26 SEA ABB=ON PLU=ON L28 NOT L33
L35 28 SEA ABB=ON PLU=ON L22 NOT L33 NOT L28

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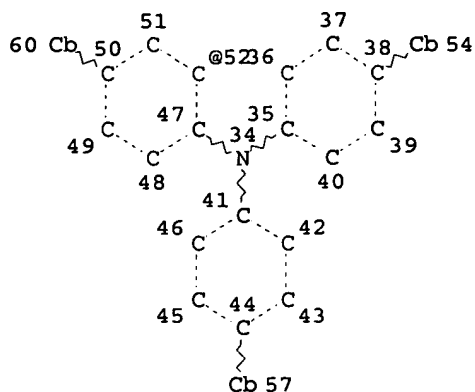
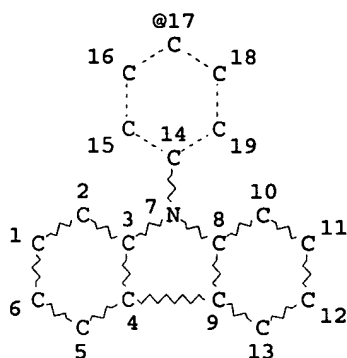
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

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=> d l33 que stat

L9 STR



G1 62

VAR G1=17/52

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 54

GGCAT IS UNS AT 57

GGCAT IS UNS AT 60

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

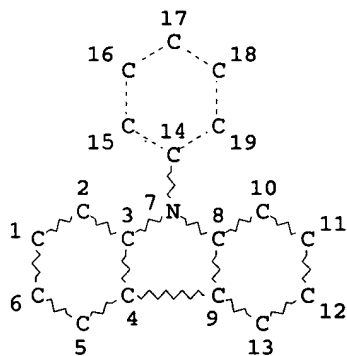
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 42

STEREO ATTRIBUTES: NONE

L11 4904 SEA FILE=REGISTRY SSS FUL L9

L12 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L14 4618 SEA FILE=REGISTRY SUB=L11 SSS FUL L12

L15 286 SEA FILE=REGISTRY ABB=ON PLU=ON L11 NOT L14

L16 2405 SEA FILE=HCAPLUS ABB=ON PLU=ON L14

L17 234 SEA FILE=HCAPLUS ABB=ON PLU=ON L15

L18 45 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND L17
L30 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 (L) PHOSPHORESCEN?
L31 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND PHOSPHORESCEN?
L32 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND PHOTOCHEM?/SC,SX

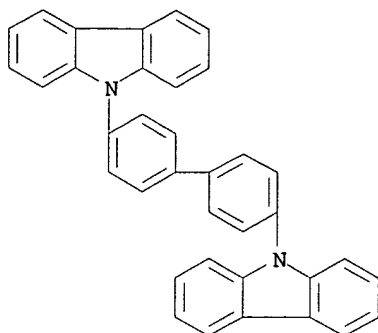
L33 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 OR L31 OR L32

=> file hcaplus

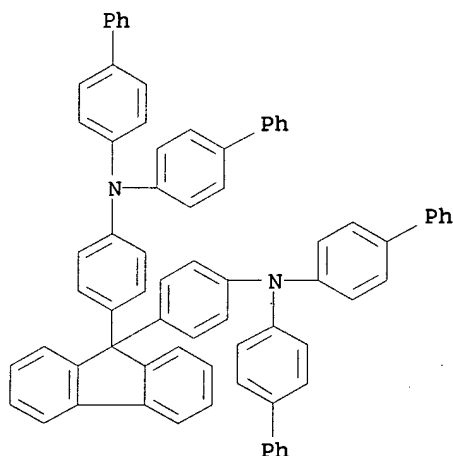
FILE 'HCAPLUS' ENTERED AT 15:27:11 ON 01 AUG 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> d l33 1-30 ibib abs hitstr hitind

L33 ANSWER 1 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:593377 HCAPLUS
DOCUMENT NUMBER: 143:267079
TITLE: Efficient Red-Emitting Cyclometalated
Iridium(III) Complexes Containing Lepidine-Based
Ligands
AUTHOR(S): Thomas, K. R. Justin; Velusamy, Marappan; Lin,
Jiann T.; Chien, Chin-Hsiung; Tao, Yu-Tai; Wen,
Yuh S.; Hu, Ya-Hui; Chou, Pi-Tai
CORPORATE SOURCE: Institute of Chemistry, Academia Sinica, Taipei,
Taiwan
SOURCE: Inorganic Chemistry (2005), 44(16), 5677-5685 X
CODEN: INOCAJ; ISSN: 0020-1669
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 143:267079
AB Heteroleptic cyclometalated Ir(III) complexes featuring
lepidine-based ligands and an acetylacetonate auxiliary ligand were
synthesized. The ligands were prep'd. by the Suzuki coupling
reaction of 2-chlorolepidine with the aryl boronic acids
4-RC₆H₄B(OH)₂ (R = Me₃C, CF₃, Me₂N, Ph₂N), 1-naphthylboronic acid or
9-phenanthreneboronic acid in 64-90% yields. Reaction of these
ligands with IrCl₃ in MeOCH₂CH₂OH-H₂O, followed by treatment with
acetylacetone in presence of Na₂CO₃ in MeOCH₂CH₂OH gave 56-88%
cyclometalated iridium complexes. Multiple lowest energy absorption
bands are obs'd. for these complexes indicating substantial mixing of
the singlet and triplet levels. All the complexes emit orange or
red color in CH₂Cl₂ solns. with lifetimes in the 1.6-3.7 μs
range. The emission in the complexes probably originates from the
3MLCT state. The complexes are applied as emitting guests in LED
devices of the structure ITO/HTL(BPAPF or NPB)/6% Ir in
CBP/BCP/Alq₃/LiF/Al. They exhibit excellent device characteristics
with an orange to red EL profile.
IT 58328-31-7 174141-92-5
RL: DEV (Device component use); USES (Uses)
(prepn. of red-emitting cyclometalated iridium acetylacetonato
complexes with lepidine-based ligands and use in LED devices)
RN 58328-31-7 HCAPLUS
CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX
NAME)



RN 174141-92-5 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, N,N'-(9H-fluoren-9-ylidenedi-4,1-phenylene)bis[N-(1,1'-biphenyl)-4-yl- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 22, 72, 73, 75
 IT Electroluminescent devices
 Luminescence, electroluminescence
Phosphorescence
 Suzuki coupling reaction
 (prepn. of red-emitting cyclometalated iridium acetylacetonato complexes with lepidine-based ligands and use in LED devices)
 IT 2085-33-8, Alq3 4733-39-5, Bathocuproin 58328-31-7
 123847-85-8, NPB (photoreceptor) 174141-92-5
 RL: DEV (Device component use); USES (Uses)
 (prepn. of red-emitting cyclometalated iridium acetylacetonato complexes with lepidine-based ligands and use in LED devices)
 REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
 L33 ANSWER 2 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:548832 HCAPLUS
 DOCUMENT NUMBER: 143:219387
 TITLE: Application of N,N,N',N'-tetrasubstituted 1,3-bis(4-aminophenyl)azulenes to hole-injecting materials for durable organic EL devices without color fade
 AUTHOR(S): Oda, Mitsunori; Thanh, Nguyen Chung; Ikai,

CORPORATE SOURCE: Masamichi; Kajioaka, Takanori; Fujikawa,
 SOURCE: Hisayoshi; Taga, Yasunori; Ogawa, Satoru;
 Shimada, Hiroko; Kuroda, Shigeyasu
 PUBLISHER: Department of Chemistry, Faculty of Science,
 DOCUMENT TYPE: Shinshu University, Nagano, 390-8621, Japan
 LANGUAGE: Chemistry Letters (2005), 34(6), 754-755
 CODEN: CMLTAG; ISSN: 0366-7022
 PUBLISHER: Chemical Society of Japan
 DOCUMENT TYPE: Journal
 LANGUAGE: English

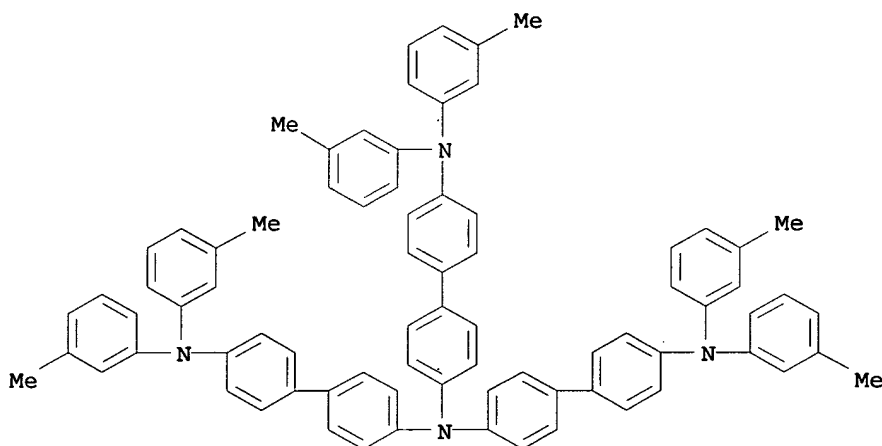
AB The title 1,3-bis(aminophenyl)azulenes were synthesized from
 1,3-dihaloazulene in two steps involving the Suzuki cross-coupling
 with 4-bromophenylboronic acid and subsequent Pd-catalyzed
 amination. Their HOMO energy levels were estd. to be comparable to
 that of the widely used hole-injecting (HI) material, copper
 phthalocyanine. The application of these diamines to HL materials
 in org. electroluminescent (EL) devices was also studied as
 non-cyanine and non-polyamine substance.

IT 189196-95-0

RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent device using N,N,N',N'-tetrasubstituted
 1,3-bis(4-aminophenyl)azulenes as hole-injecting materials)

RN 189196-95-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(3-
 methylphenyl)amino] [1,1'-biphenyl]-4-yl]-N',N'-bis(3-methylphenyl)-
 (9CI) (CA INDEX NAME)

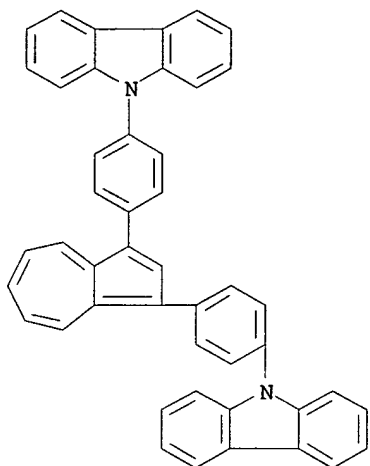


IT 862421-93-0P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
 preparation); PREP (Preparation); USES (Uses)
 (synthesis and properties of bis(aminophenyl)azulenes and their
 application as hole-injecting materials for org.
 electroluminescent devices)

RN 862421-93-0 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,3-azulenediyl]di-4,1-phenylene]bis- (9CI) (CA
 INDEX NAME)

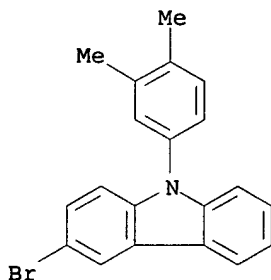


CC 74-13 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)
IT 2085-33-8, AlQ3 189196-95-0
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent device using N,N,N',N'-tetrasubstituted
1,3-bis(4-aminophenyl)azulenes as hole-injecting materials)
IT 862421-91-8P 862421-92-9P 862421-93-0P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
preparation); PREP (Preparation); USES (Uses)
(synthesis and properties of bis(aminophenyl)azulenes and their
application as hole-injecting materials for org.
electroluminescent devices)
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L33 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:383167 HCAPLUS
DOCUMENT NUMBER: 143:107216
TITLE: Novel Star-Shaped Triphenylamine-Based Molecular
Glasses and Their Use in OFETs
AUTHOR(S): Sonntag, Martin; Kreger, Klaus; Hanft, Doris;
Strohriegl, Peter; Setayesh, Sepas; De Leeuw,
Dago
CORPORATE SOURCE: Universitaet Bayreuth, Bayreuth, 95440, Germany
SOURCE: Chemistry of Materials (2005), 17(11), 3031-3039
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

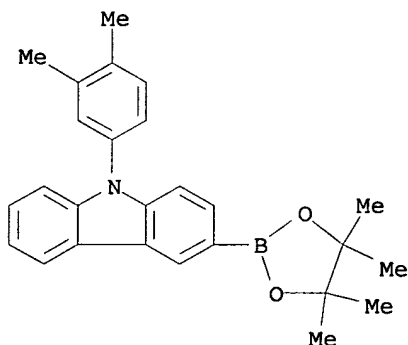
AB Six novel star-shaped compds. with a triphenylamine core and
carbazole or fluorene sidearms were synthesized by Suzuki
cross-coupling. The star-shaped mols. are able to form mol.
glasses. They were characterized regarding their thermal, optical,
and electrochem. properties. The new compds. were tested as org.
semiconductors in soln. processed org. field-effect transistors
(OFETs). Mobilities of $3 + 10^{-4}$ cm²/(V s), high on/off ratios
of up to 10⁵, and low threshold voltages were obtained. The new
materials show very small hysteresis and an exceptionally high
stability under ambient conditions.
IT 856422-40-7 856422-43-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(precursors for star shaped triphenylamine-based mol. glasses for
org. field effect transistors)
RN 856422-40-7 HCAPLUS

CN 9H-Carbazole, 3-bromo-9-(3,4-dimethylphenyl)- (9CI) (CA INDEX NAME)



RN 856422-43-0 HCAPLUS

CN 9H-Carbazole, 9-(3,4-dimethylphenyl)-3-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)- (9CI) (CA INDEX NAME)



IT 350511-99-8P 350512-00-4P 350512-01-5P

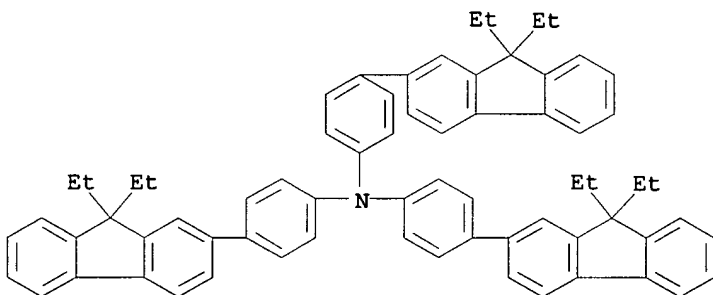
856422-48-5P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(synthesis and elec. and optical properties of triphenylamine-based star shaped mol. glass org. field effect transistors)

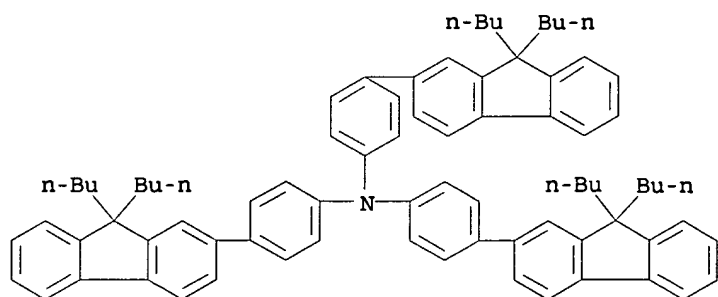
RN 350511-99-8 HCAPLUS

CN Benzenamine, 4-(9,9-diethyl-9H-fluoren-2-yl)-N,N-bis[4-(9,9-diethyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)



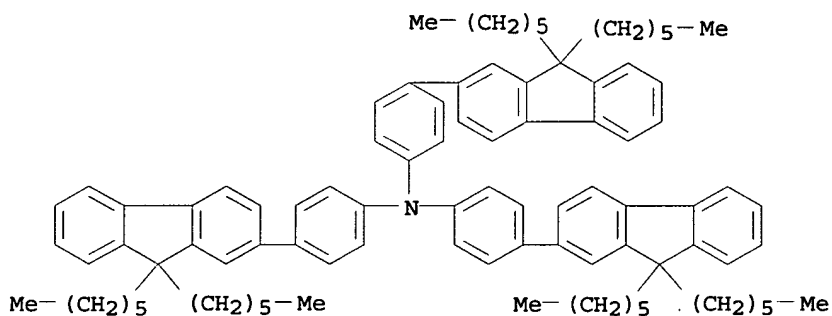
RN 350512-00-4 HCAPLUS

CN Benzenamine, 4-(9,9-dibutyl-9H-fluoren-2-yl)-N,N-bis[4-(9,9-dibutyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)



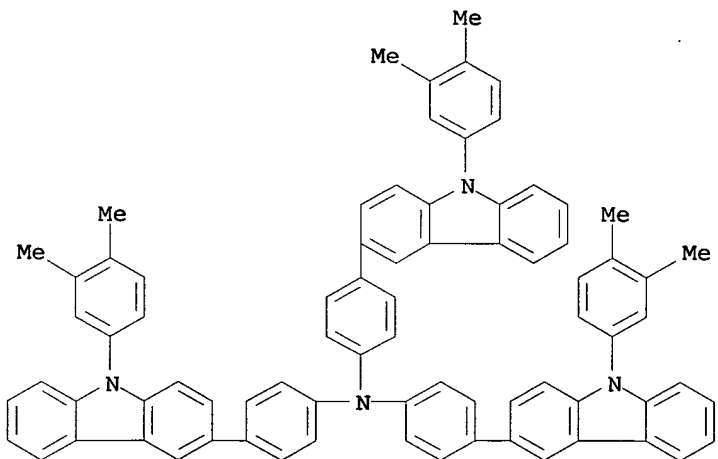
RN 350512-01-5 HCAPLUS

CN Benzenamine, 4-(9,9-dihexyl-9H-fluoren-2-yl)-N,N-bis[4-(9,9-dihexyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 856422-48-5 HCAPLUS

CN Benzenamine, 4-[9-(3,4-dimethylphenyl)-9H-carbazol-3-yl]-N,N-bis[4-[9-(3,4-dimethylphenyl)-9H-carbazol-3-yl]phenyl]- (9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)

Section cross-reference(s): 22, 28, 74

IT 1133-80-8 1592-95-6 3652-90-2 88223-35-2 226070-05-9
 264925-45-3 287493-15-6 628336-85-6 785051-52-7 856422-39-4
 856422-40-7 856422-41-8 856422-42-9 856422-43-0

856422-44-1

RL: RCT (Reactant); RACT (Reactant or reagent)
 (precursors for star shaped triphenylamine-based mol. glasses for
 org. field effect transistors)

IT 4181-20-8P 350511-99-8P 350512-00-4P

350512-01-5P 856422-48-5P 856422-49-6P

856422-50-9P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)

(synthesis and elec. and optical properties of
 triphenylamine-based star shaped mol. glass org. field effect
 transistors)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L33 ANSWER 4 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:231570 HCAPLUS

DOCUMENT NUMBER: 142:306391

TITLE: Electrophotographic photoconductor,
 electrophotographic process, electrophotographic
 apparatus, and process cartridge

INVENTOR(S): Ikegami, Takaaki; Nohsho, Shinji; Kurimoto,
 Eiji; Kami, Hidetoshi; Sugino, Akihiro;
 Yamashita, Yasuyuki; Nakamori, Hideo; Takada,
 Takeshi

PATENT ASSIGNEE(S): Ricoh Company, Japan

SOURCE: Eur. Pat. Appl., 246 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|-------------------|
| EP 1515192 | A1 | 20050316 | EP 2004-21562 | 200409 10 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR | | | | |
| JP 2005084583 | A2 | 20050331 | JP 2003-319362 | 200309 11 |
| JP 2005092068 | A2 | 20050407 | JP 2003-328177 | 200309 19 |
| JP 2005107471 | A2 | 20050421 | JP 2003-421103 | 200312 18 |
| JP 2006030784 | A2 | 20060202 | JP 2004-211846 | 200407 20 |
| CN 1619425 | A | 20050525 | CN 2004-10103887 | 200409 13 |
| US 2005118518 | A1 | 20050602 | US 2004-938585 | 200409 13 |
| PRIORITY APPLN. INFO.: | | | JP 2003-319362 | A 200309 11 |
| | | | JP 2003-321814 | A |

200309
12

JP 2003-328177 A

200309
19

JP 2003-421103 A

200312
18

JP 2004-211846 A

200407
20

OTHER SOURCE(S): MARPAT 142:306391

AB The present invention relates to an electrophotog. photoconductor comprising a photoconductive layer, a protective layer, and a conductive support, wherein the protective layer is disposed as the outermost layer of the photoconductive layer, and 20 % by vol. to 60 % by vol. of fine particles of fluorine-contained resin and at least one compd. selected from amine arom. compds. and hydroxy arom. compds. are incorporated into the protective layer. According to the present invention, high durability may be achieved, image degrdn. such as lags may be controlled from the increase of residual potential and decrease of charging, and high quality images may be formed stably even after the prolonged and repeated usage. The present invention also relates to an electrophotog. process, an electrophotog. app. and a process cartridge for the electrophotog. app. which utilize the electrophotog. photoconductor resp.

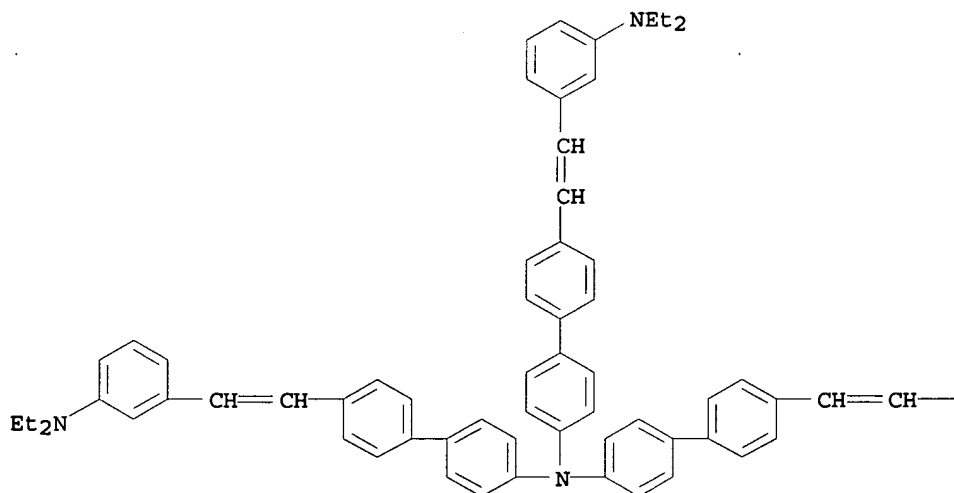
IT 501368-02-1 847872-28-0

RL: TEM (Technical or engineered material use); USES (Uses)
(protective layer of electrophotog. photoconductor, contg.)

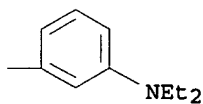
RN 501368-02-1 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-[2-[3-(diethylamino)phenyl]ethenyl]-N,N-bis[4'-[2-[3-(diethylamino)phenyl]ethenyl][1,1'-biphenyl]-4-yl]-(9CI) (CA INDEX NAME)

PAGE 1-A

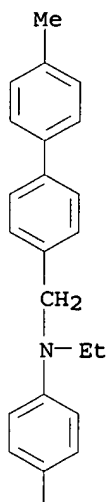


PAGE 1-B

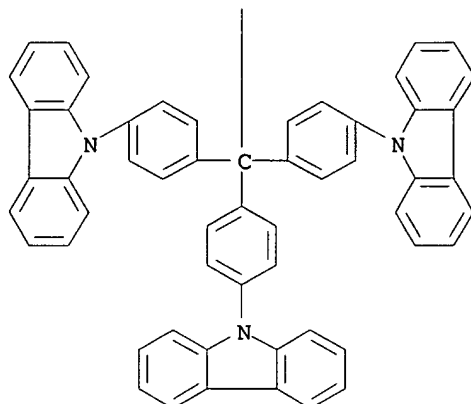


RN 847872-28-0 HCAPLUS
CN [1,1'-Biphenyl]-4-methanamine, N-ethyl-4'-methyl-N-[4-[tris[4-(9H-carbazol-9-yl)phenyl]methyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM G03G005-147
 CC 74-3 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 IT 88-58-4 4483-91-4 7030-63-9 7475-96-9 10004-39-4
 26172-18-9 27907-76-2 33906-02-4 42051-93-4 62555-82-2
 64287-26-9 67707-84-0 85979-45-9 94939-64-7 96924-07-1
 101836-19-5 113318-52-8 119062-22-5 119564-40-8 119629-15-1
 139601-36-8 170636-06-3 205327-03-3 501367-56-2 501367-58-4
 501367-59-5 501367-60-8 501367-62-0 501367-63-1 501367-64-2
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 847872-52-0 847872-53-1 847872-54-2

RL: TEM (Technical or engineered material use); USES (Uses)
 (protective layer of electrophotog. photoconductor, contg.)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L33 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:932024 HCAPLUS

DOCUMENT NUMBER: 141:403587

TITLE: Organic electroluminescent (EL) element with
 high emission efficiency, illumination, and
 display device assembled with same

INVENTOR(S): Oshiyama, Tomohiro; Suzurizato, Yoshiyuki; Kita,
 Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 64 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|------------|
| JP 2004311404 | A2 | 20041104 | JP 2004-18039 | 20040127 |
| PRIORITY APPLN. INFO.: | | | JP 2003-84076 | A 20030326 |

OTHER SOURCE(S): MARPAT 141:403587

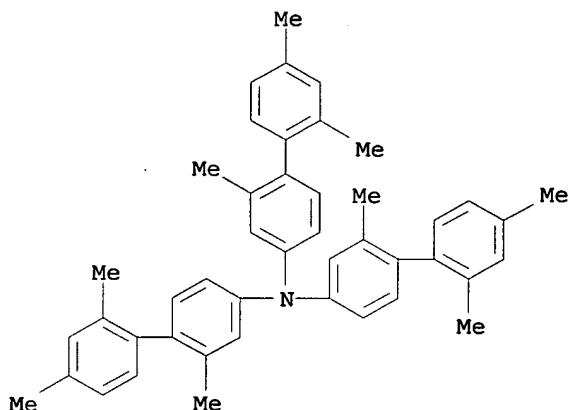
AB The org. EL element contain org. layers involving at least light-emitting layers, ≥ 1 of which contain compds. having ≥ 1 biaryl moiety structure and dihedral angle θ of the biaryl moiety structure 10-90° in the lowest excited triplet state (T1), calcd. by nonempirical MO method. Preferably, the compds. are represented by the general formulas Z1Ar1Ar2Z2 with $\theta 1$ and Z3Ar3Ar4Ar5Z4 with $\theta 2$ and $\theta 3$ [Ar1-Ar5 = arylene, heteroarylene; Z1-Z4 = diarylamino, arom. heterocyclic group; $\theta 1$ (dihedral angle of Ar1 and Ar2 in Ta) = 0-90°; $\theta 2$ (dihedral angles of Ar3 and Ar4 in T1) = 10-90°; $\theta 3$ (dihedral angles of Ar4 and Ar5 in T1) = 10-90°]. Preferably, the light-emitting layer contain phosphorescent compds. selected from Os, Ir, Rh, or Pt complex-based compds. The org. EL device is useful for an illumination of display device which may contain a LCD as an imager.

IT 787638-65-7 787638-66-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(hole-transporting layer; org. EL element with high emission efficiency for light of display device)

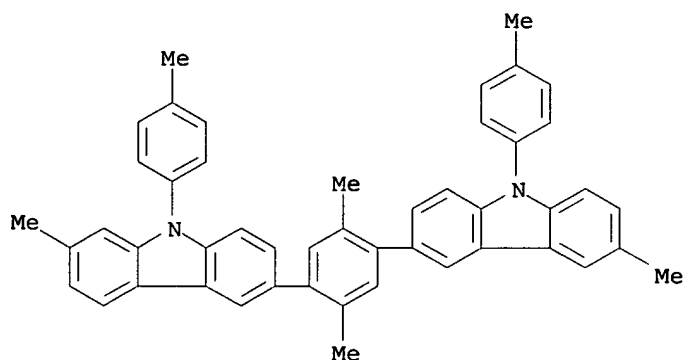
RN 787638-65-7 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 2,2',4'-trimethyl-N,N-bis(2,2',4'-trimethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 787638-66-8 HCAPLUS

CN 9H-Carbazole, 6-[2,5-dimethyl-4-[6-methyl-9-(4-methylphenyl)-9H-carbazol-3-yl]phenyl]-2-methyl-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



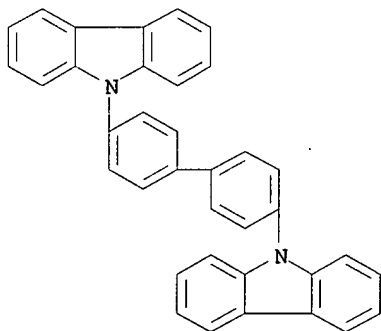
IT 58328-31-7 604785-54-8 697311-97-0

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(host; org. EL element with high emission efficiency for light of display device)

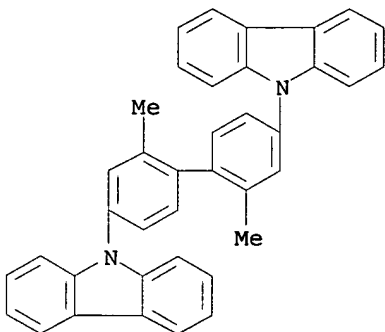
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



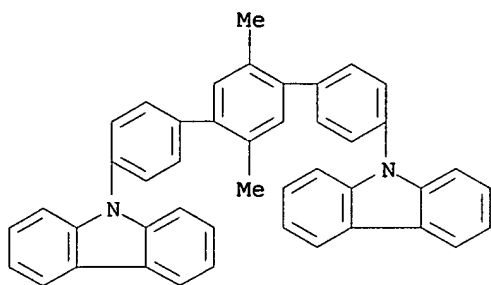
RN 604785-54-8 HCAPLUS

CN 9H-Carbazole, 9,9'-(2,2'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis- (9CI) (CA INDEX NAME)

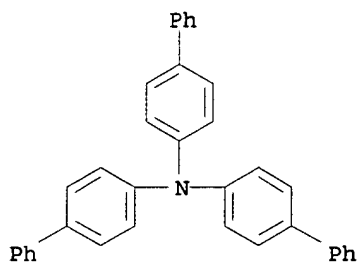


RN 697311-97-0 HCAPLUS

CN 9H-Carbazole, 9,9'-(2',5'-dimethyl[1,1':4',1''-terphenyl]-4,4''-diyl)bis- (9CI) (CA INDEX NAME)



IT 6543-20-0
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (org. EL element with high emission efficiency for light of display device)
 RN 6543-20-0 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, N,N-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
 ICS C09K011-06; H05B033-22
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 IT 787638-65-7 787638-66-8
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (hole-transporting layer; org. EL element with high emission efficiency for light of display device)
 IT 58328-31-7 604785-54-8 697311-97-0
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (host; org. EL element with high emission efficiency for light of display device)
 IT 6543-20-0
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (org. EL element with high emission efficiency for light of display device)

L33 ANSWER 6 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:802182 HCAPLUS

DOCUMENT NUMBER: 141:322678

TITLE: Organic electroluminescent element, illuminator, and display

INVENTOR(S): Suzuri, Yoshiyuki; Kita, Hiroshi; Oshiyama, Tomohiro; Fukuda, Mitsuhiro; Ueda, Noriko

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 63 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|--------------------------|
| US 2004189190 | A1 | 20040930 | US 2004-804788 | 20040319 |
| EP 1464691 | A2 | 20041006 | EP 2004-6649 | 20040319 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK | | | | |
| JP 2004311424 | A2 | 20041104 | JP 2004-84609 | 20040323 |
| PRIORITY APPLN. INFO.: | | | | JP 2003-85023 A 20030326 |

Current Application

OTHER SOURCE(S): MARPAT 141:322678

AB Disclosed are an org. electroluminescent element comprising a light emission layer contg. a **phosphorescent** compd. and a hole transporting layer adjacent thereto contg. a hole transporting material, wherein the hole transporting material has a 0-0 band of the **phosphorescence** spectra of from 300 to 450 nm and has a mol. wt. of not less than 550, and an illuminator and a display each comprising the org. electroluminescent element.

IT 58328-31-7 765943-83-7 765943-85-9

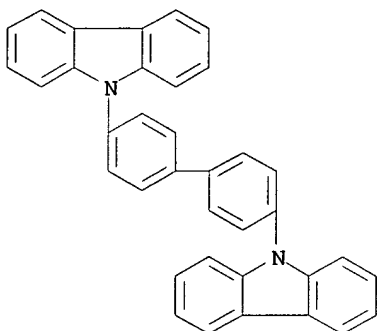
765943-87-1 765943-89-3 765943-90-6

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent element contg. **phosphorescent** compd. and hole-transporting compd.)

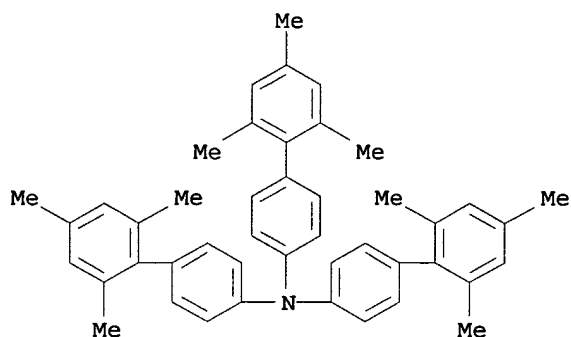
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



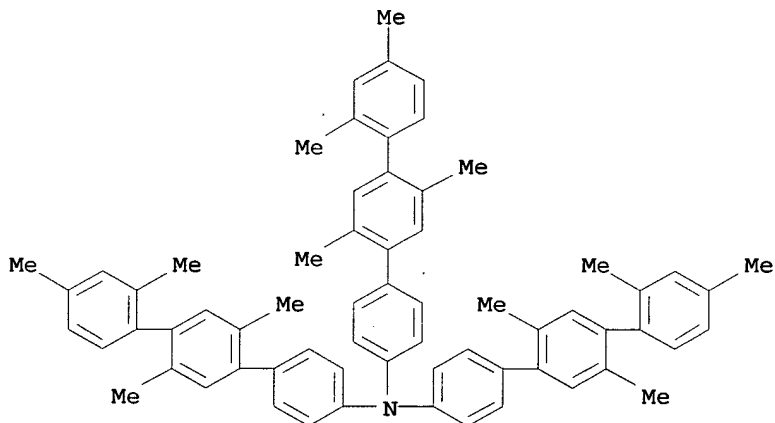
RN 765943-83-7 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 2',4',6'-trimethyl-N,N-bis(2',4',6'-trimethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



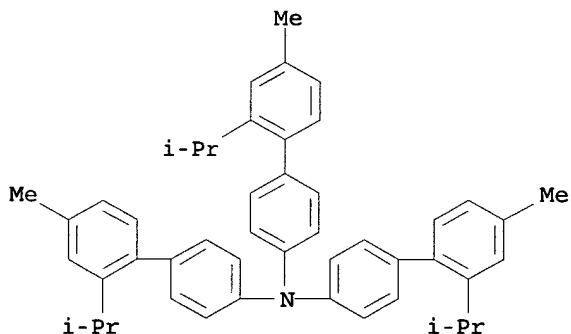
RN 765943-85-9 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, 2',2'',4'',5'-tetramethyl-N,N-bis(2',2'',4'',5'-tetramethyl[1,1':4',1''-terphenyl]-4-yl)- (9CI)
(CA INDEX NAME)



RN 765943-87-1 HCAPLUS

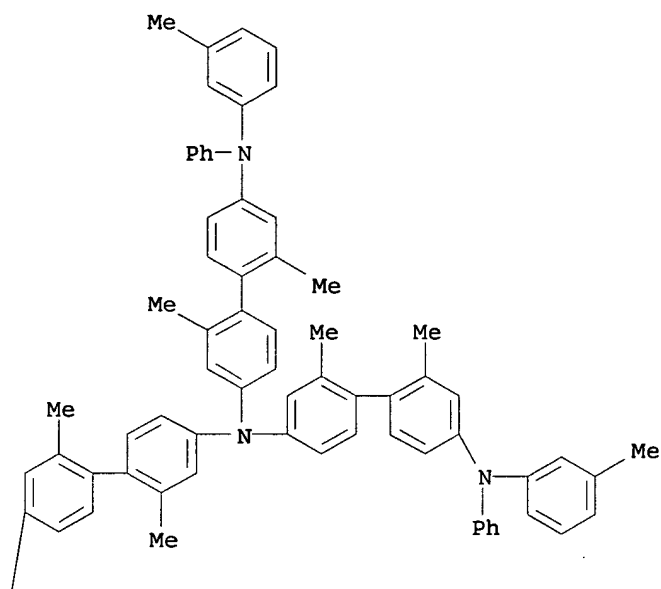
CN [1,1'-Biphenyl]-4-amine, 4'-methyl-2'-(1-methylethyl)-N,N-bis[4'-methyl-2'-(1-methylethyl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



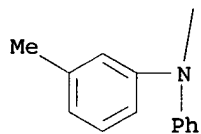
RN 765943-89-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[2,2'-dimethyl-4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-2,2'-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)

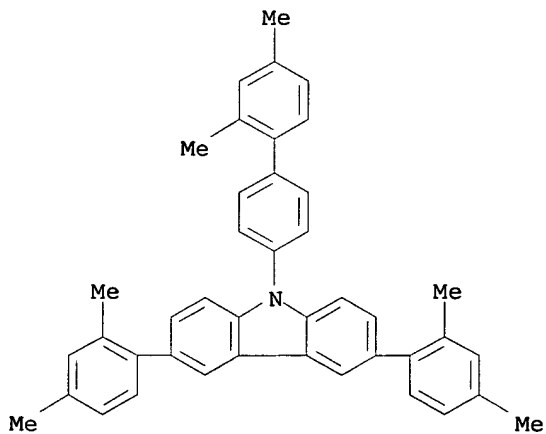
PAGE 1-A



PAGE 2-A



RN 765943-90-6 HCAPLUS
 CN 9H-Carbazole, 9-(2',4'-dimethyl[1,1'-biphenyl]-4-yl)-3,6-bis(2,4-dimethylphenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
 ICS F21V009-16
 INCL 313504000

CC 74-12 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)
ST org electroluminescent display **phosphorescent** compd hole
transporting material
IT Electroluminescent devices
(displays; org. electroluminescent element contg.
phosphorescent compd. and hole-transporting compd.)
IT Luminescent screens
(electroluminescent; org. electroluminescent element contg.
phosphorescent compd. and hole-transporting compd.)
IT 2085-33-8, Alq3 4733-39-5 58328-31-7 58473-78-2
61526-94-1 123847-85-8 149685-52-9 178331-01-6 263722-47-0
405171-87-1 612519-55-8 693794-98-8 765943-77-9 765943-79-1
765943-81-5 765943-83-7 765943-85-9
765943-87-1 765943-89-3 765943-90-6
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent element contg. **phosphorescent**
compd. and hole-transporting compd.)

L33 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:801704 HCAPLUS

DOCUMENT NUMBER: 141:304413

TITLE: Organic electroluminescent lighting equipment
useful as light sources for liquid crystal
displays

INVENTOR(S): Genta, Kazuo; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2004273137 | A2 | 20040930 | JP 2003-58320 | 200303 05 |
| | | | | 200303 05 |

PRIORITY APPLN. INFO.:

JP 2003-58320

AB The equipment consists of an org. electroluminescent (EL) device
with max. emission wavelength <500 nm formed on a substrate, which
contains dispersed phosphors absorbing emission light from the org.
EL device as an excitation light and emit light at wavelength longer
than that of the excitation light, and preferably shows haze
≥15% and <90% and total light transmittance ≥50% and
<95%. The equipment emits white light with high luminescence
efficiency.

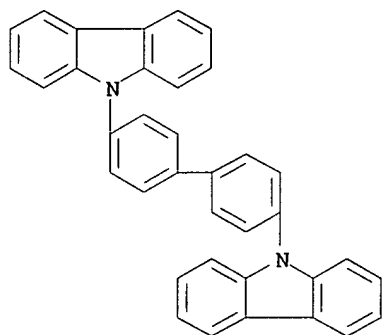
IT 58328-31-7 405173-85-5

RL: DEV (Device component use); USES (Uses)

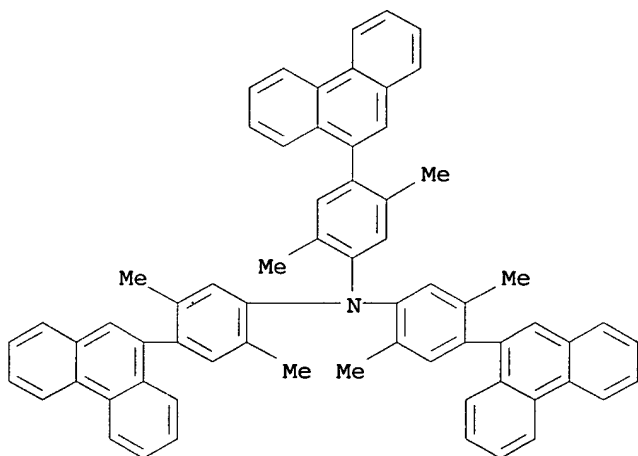
(emitter layer in org. EL device; org. electroluminescent
lighting equipment useful as light sources for liq. crystal
displays)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX
NAME)



RN 405173-85-5 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



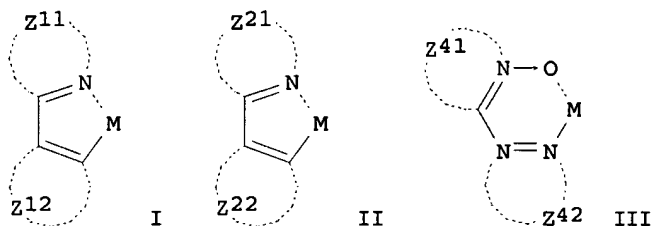
IC ICM H05B033-02
 ICS H05B033-12; H05B033-14
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 IT **58328-31-7 405173-85-5**
 RL: DEV (Device component use); USES (Uses)
 (emitter layer in org. EL device; org. electroluminescent
 lighting equipment useful as light sources for liq. crystal
 displays)

L33 ANSWER 8 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:739385 HCAPLUS
 DOCUMENT NUMBER: 141:268179
 TITLE: Long-life white-emitting organic
 electroluminescent devices, displays,
 illumination apparatus, and electric appliances
 therewith
 INVENTOR(S): Fukuda, Mitsuhiro; Genda, Kazuo
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 577 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2004253298 | A2 | 20040909 | JP 2003-43860 | 20030221 |
| PRIORITY APPLN. INFO.: | | | | 20030221 |

OTHER SOURCE(S): MARPAT 141:268179
GI

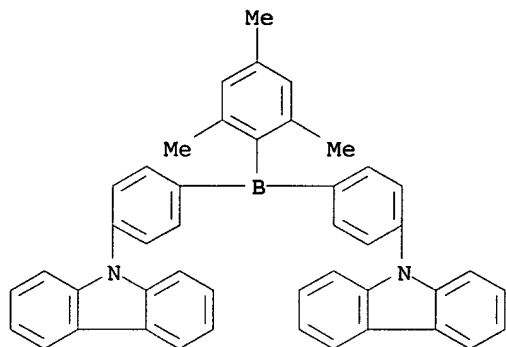


AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by $X1R1C:CR2X2$ [$X1, X2$ = aryl, heterocycle; $R1, R2$ = aryl, heterocyclic hydrocarbyl, cycloalkoxy ($R1 = R2$ = aryl)], $R1R12R13R14R15P$ ($R11-R15$ = monovalent substituent), $Ar2Ar1C6H4(m-Ar1Ar2)$ [$Ar1$ = bivalent arom. hydrocarbylene; $Ar2$ = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo], $Z(ArQ)n$ [Q = (substituted) o-(2-pyridyl)phenyl; Z = n-valent bridging group, single bond; Ar = bivalent arylene; $n = 2-8$], etc., (ii) fluorescent compds. with mol. wt. 500-2000 and at. ratio $F/(F + H)$ 0-0.9 and having fluorescent peak at ≤ 415 nm, (iii) polysilanes $(R21R22Si)n$ [$R21, R22$ = alkyl(oxy), arom. group, aryloxy; $n1 \geq 3$] or $[R31(Ar31NR32R33)Si]n$ [$R31$ = alkyl(oxy), arom. group, aryloxy; $R32, R33$ = alkyl, arom. group; $Ar31$ = arylene; $n2 \geq 3$], and/or (iv) fluorescent compds. satisfying at. ratio N/C 0-0.05. The devices, having phosphorescent dopants I ($Z11$ = arom. azacycle; $Z12$ = nonarom. ring, 5-membered arom. ring, azulene; M = metal), II ($Z21, Z22$ = arom. azacycle; M = metal), or III ($Z41$ = azacycle; $Z42$ = ring; M = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, esp. of LCD.

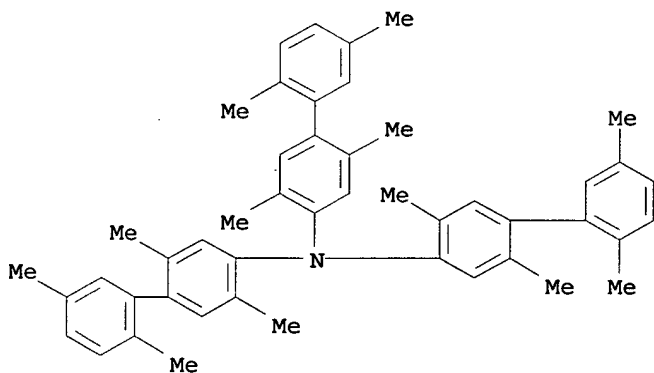
IT 332350-53-5 405171-49-5 405172-39-6
478262-73-6 478262-74-7 608145-85-3
643758-09-2 643758-10-5 643758-15-0
655240-48-5 663219-23-6 663219-25-8
663219-28-1 663219-29-2 663219-39-4
666839-78-7 666839-81-2 666839-86-7
666839-89-0 666839-92-5 669072-72-4
694534-34-4 694534-43-5 694534-44-6
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722547-84-4 722547-85-5 722547-87-7
722547-88-8 722547-89-9 754231-83-9
754231-84-0 754231-87-3

RL: DEV (Device component use); USES (Uses)
(long-life white-emitting org. LED contg. azacyclic phosphorescent dopants and showing high luminescent efficiency)

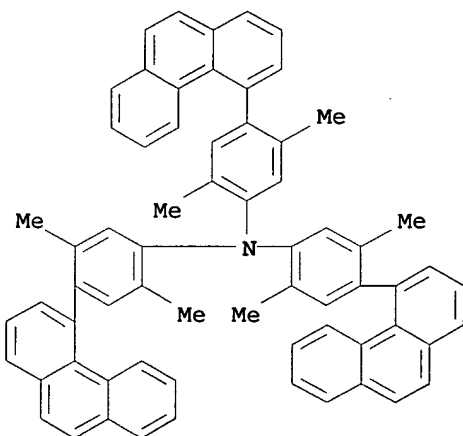
RN 332350-53-5 HCAPLUS
CN 9H-Carbazole, 9,9'-[[(2,4,6-trimethylphenyl)borylene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



RN 405171-49-5 HCAPLUS
CN [1,1'-Biphenyl]-4-amine, 2,2',5,5'-tetramethyl-N,N-bis(2,2',5,5'-tetramethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

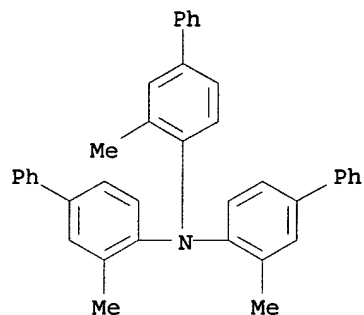


RN 405172-39-6 HCAPLUS
CN Benzenamine, N,N-bis[2,5-dimethyl-4-(4-phenanthrenyl)phenyl]-2,5-dimethyl-4-(4-phenanthrenyl)- (9CI) (CA INDEX NAME)



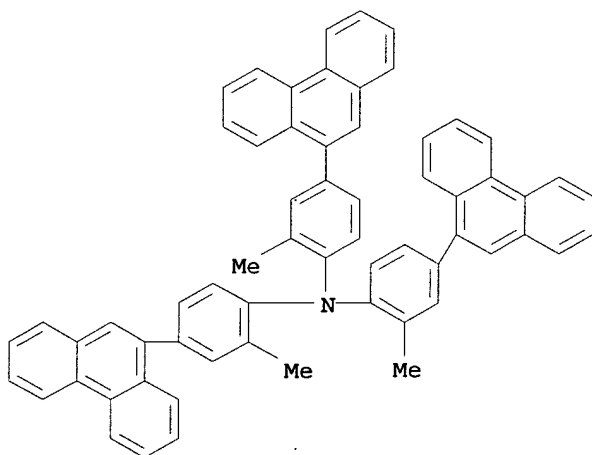
RN 478262-73-6 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 3-methyl-N,N-bis(3-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



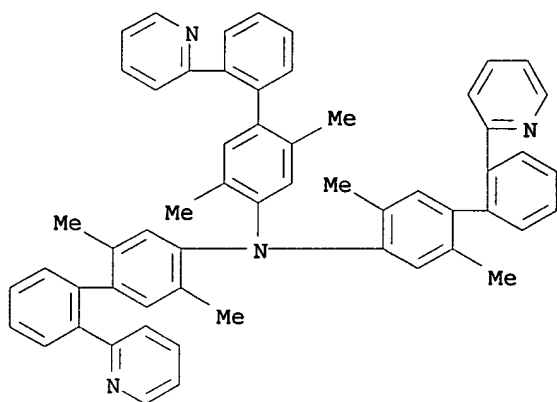
RN 478262-74-7 HCAPLUS

CN Benzenamine, 2-methyl-N,N-bis[2-methyl-4-(9-phenanthrenyl)phenyl]-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



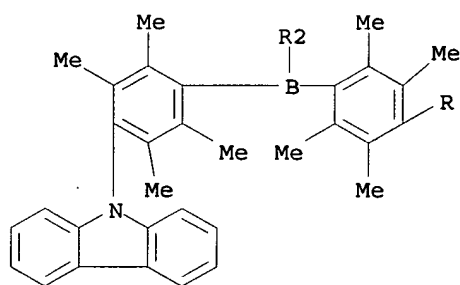
RN 608145-85-3 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N,N-bis[2,5-dimethyl-2'-(2-pyridinyl)[1,1'-biphenyl]-4-yl]-2,5-dimethyl-2'-(2-pyridinyl)- (9CI) (CA INDEX NAME)

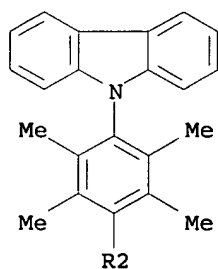
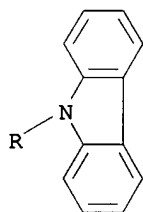


RN 643758-09-2 HCAPLUS
 CN 9H-Carbazole, 9,9',9''-[borylidynetris(2,3,5,6-tetramethyl-4,1-phenylene)]tris- (9CI) (CA INDEX NAME)

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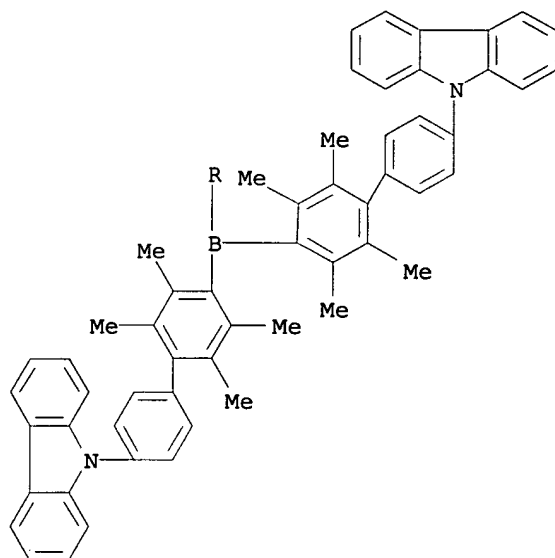


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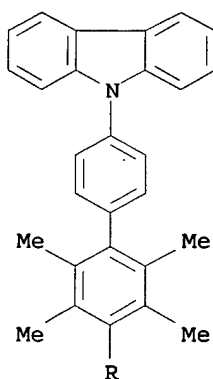


RN 643758-10-5 HCAPLUS
 CN 9H-Carbazole, 9,9',9''-[borylidynetris(2',3',5',6'-tetramethyl[1,1'-biphenyl]-4',4'-diyl)]tris- (9CI) (CA INDEX NAME)

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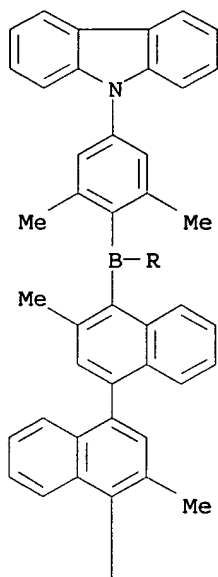


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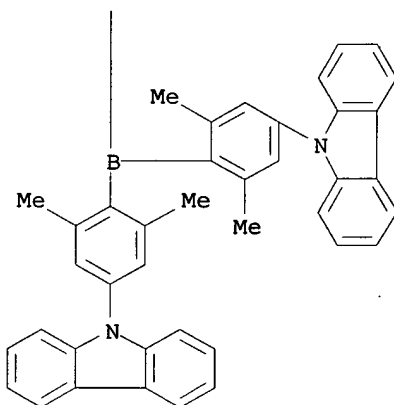


RN 643758-15-0 HCAPLUS
 CN 9H-Carbazole, 9,9',9'',9'''-[(3,3'-dimethyl[1,1'-binaphthalene]-4,4'-diyl)bis[borylidynebis(3,5-dimethyl-4,1-phenylene)]]tetrakis- (9CI)
 (CA INDEX NAME)

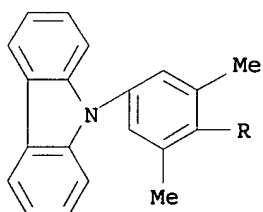
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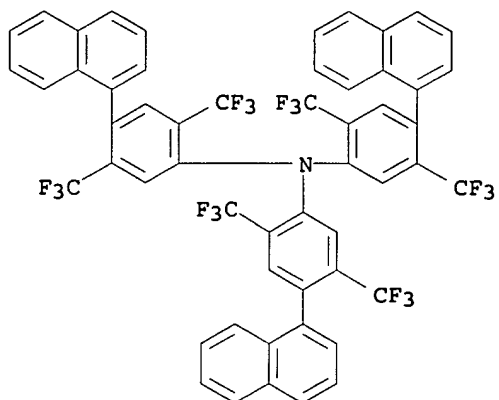
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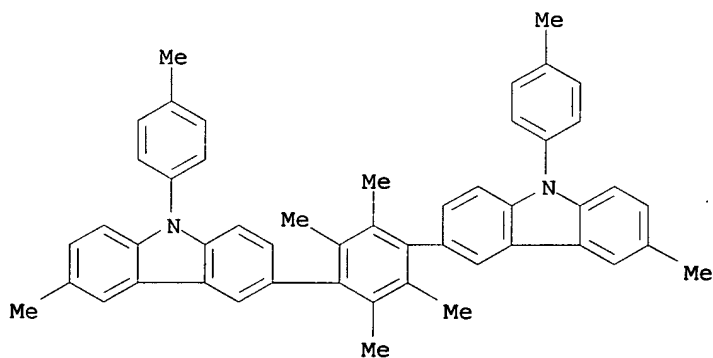


RN 655240-48-5 HCAPLUS
 CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



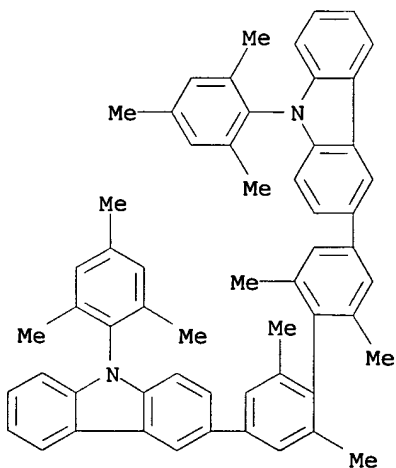
RN 663219-23-6 HCAPLUS

CN 9H-Carbazole, 3,3'-(2,3,5,6-tetramethyl-1,4-phenylene)bis[6-methyl-9-(4-methylphenyl)]- (9CI) (CA INDEX NAME)

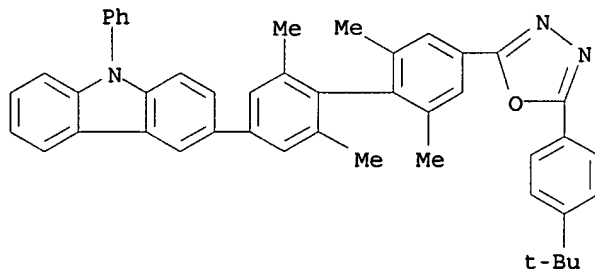


RN 663219-25-8 HCAPLUS

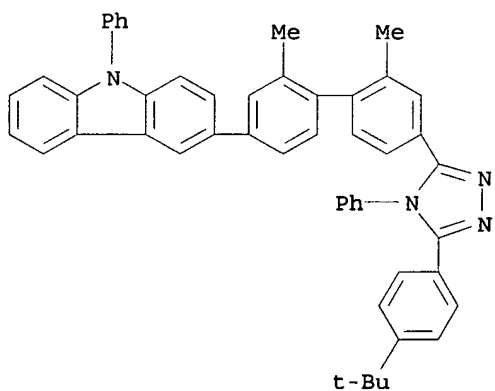
CN 9H-Carbazole, 3,3'-(2,2',6,6'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis[9-(2,4,6-trimethylphenyl)]- (9CI) (CA INDEX NAME)



RN 663219-28-1 HCAPLUS
 CN 9H-Carbazole, 3-[4'-[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]-2,2',6,6'-tetramethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI)
 (CA INDEX NAME)

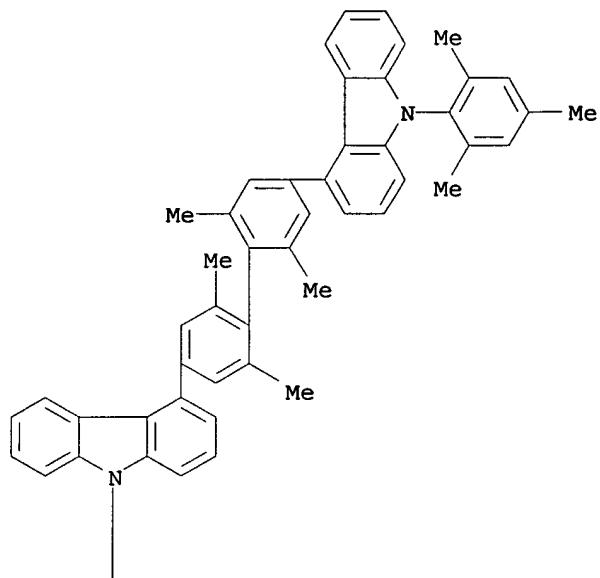


RN 663219-29-2 HCAPLUS
 CN 9H-Carbazole, 3-[4'-[5-[4-(1,1-dimethylethyl)phenyl]-4-phenyl-4H-1,2,4-triazol-3-yl]-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)

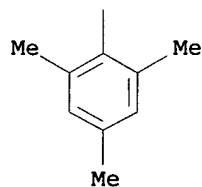


RN 663219-39-4 HCAPLUS
 CN 9H-Carbazole, 4,4'-(2,2',6,6'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis[9-(2,4,6-trimethylphenyl)- (9CI) (CA INDEX NAME)

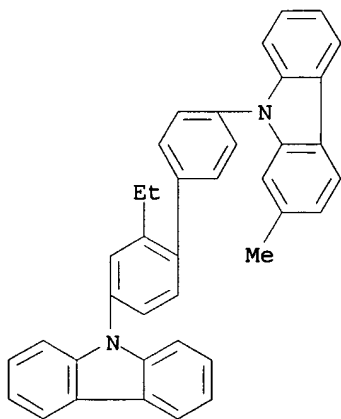
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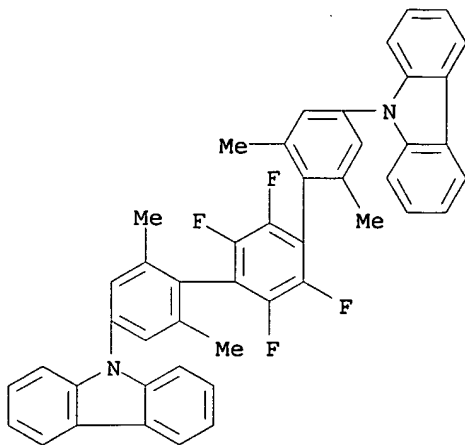


RN 666839-78-7 HCAPLUS
 CN 9H-Carbazole, 9-[4'-(9H-carbazol-9-yl)-2'-ethyl[1,1'-biphenyl]-4-yl]-2-methyl- (9CI) (CA INDEX NAME)



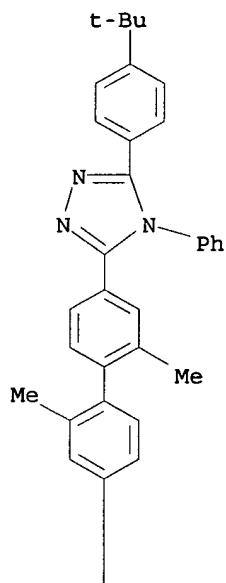
RN 666839-81-2 HCAPLUS
 CN 9H-Carbazole, 9,9'-(2',3',5',6'-tetrafluoro-2,2'',6,6''-tetramethyl[1,1':4',1''-terphenyl]-4,4''-diyl)bis- (9CI) (CA INDEX NAME)

NAME)

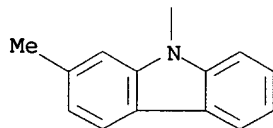


RN 666839-86-7 HCAPLUS
 CN 9H-Carbazole, 9-[4'-[5-[4-(1,1-dimethylethyl)phenyl]-4-phenyl-4H-1,2,4-triazol-3-yl]-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-2-methyl-(9CI) (CA INDEX NAME)

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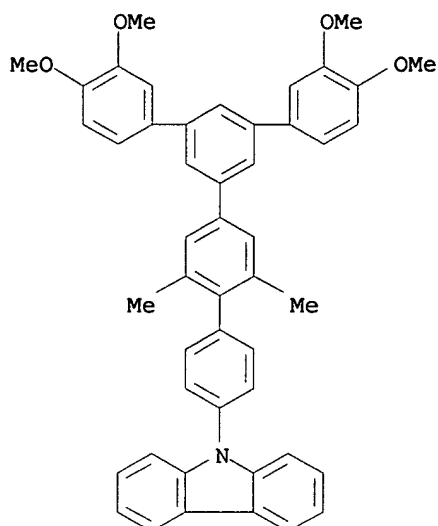


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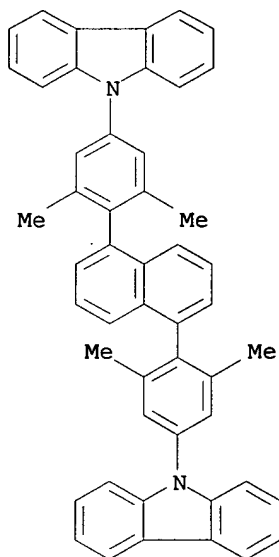
RN 666839-89-0 HCAPLUS

CN 9H-Carbazole, 9-[5'-(3,4-dimethoxyphenyl)-3,4-dimethoxy-3'',5''-dimethyl[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]- (9CI) (CA INDEX NAME)



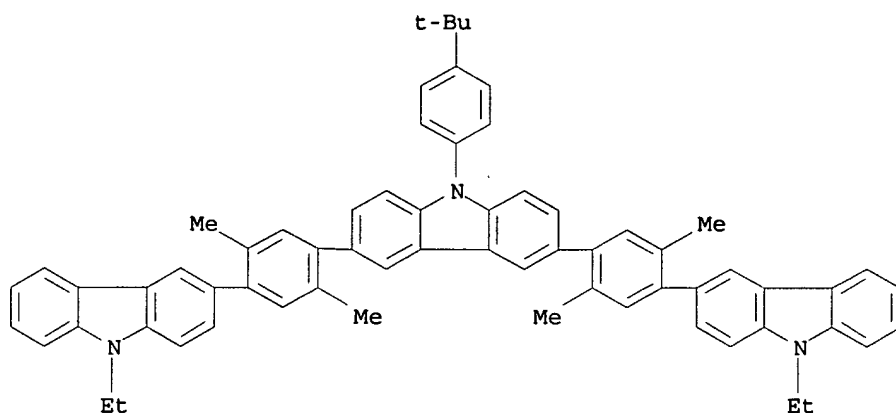
RN 666839-92-5 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,5-naphthalenediylbis(3,5-dimethyl-4,1-phenylene)]bis- (9CI) (CA INDEX NAME)

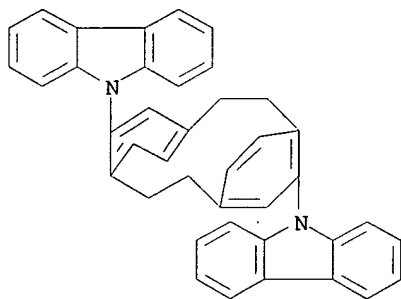


RN 669072-72-4 HCAPLUS

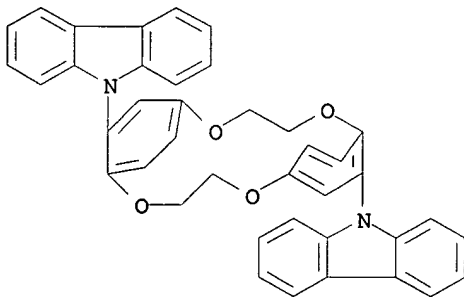
CN 9H-Carbazole, 9-[4-(1,1-dimethylethyl)phenyl]-3,6-bis[4-(9-ethyl-9H-carbazol-3-yl)-2,5-dimethylphenyl]- (9CI) (CA INDEX NAME)



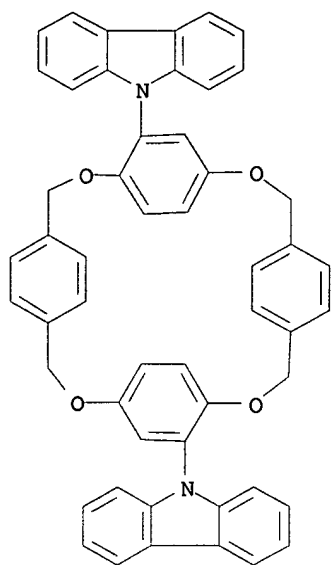
RN 694534-34-4 HCAPLUS
 CN 9H-Carbazole, 9,9'-tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaene-5,11-diylbis- (9CI) (CA INDEX NAME)



RN 694534-43-5 HCAPLUS
 CN 9H-Carbazole, 9,9'-(2,5,10,13-tetraoxatricyclo[12.2.2.26,9]eicosa-6,8,14,16,17,19-hexaene-7,15-diyl)bis- (9CI) (CA INDEX NAME)

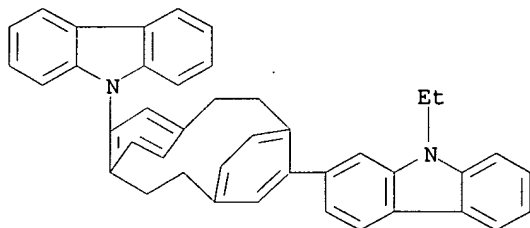


RN 694534-44-6 HCAPLUS
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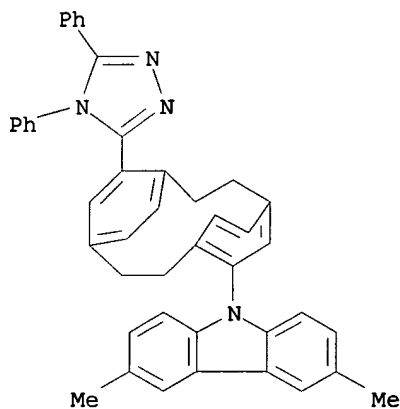
RN 694534-45-7 HCAPLUS

CN 9H-Carbazole, 2-[11-(9H-carbazol-9-yl)tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaen-5-yl]-9-ethyl- (9CI) (CA INDEX NAME)



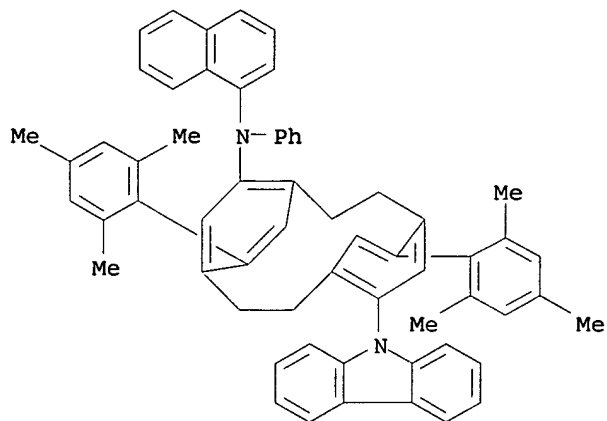
RN 694534-46-8 HCAPLUS

CN 9H-Carbazole, 9-[11-(4,5-diphenyl-4H-1,2,4-triazol-3-yl)tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaen-5-yl]-3,6-dimethyl- (9CI) (CA INDEX NAME)



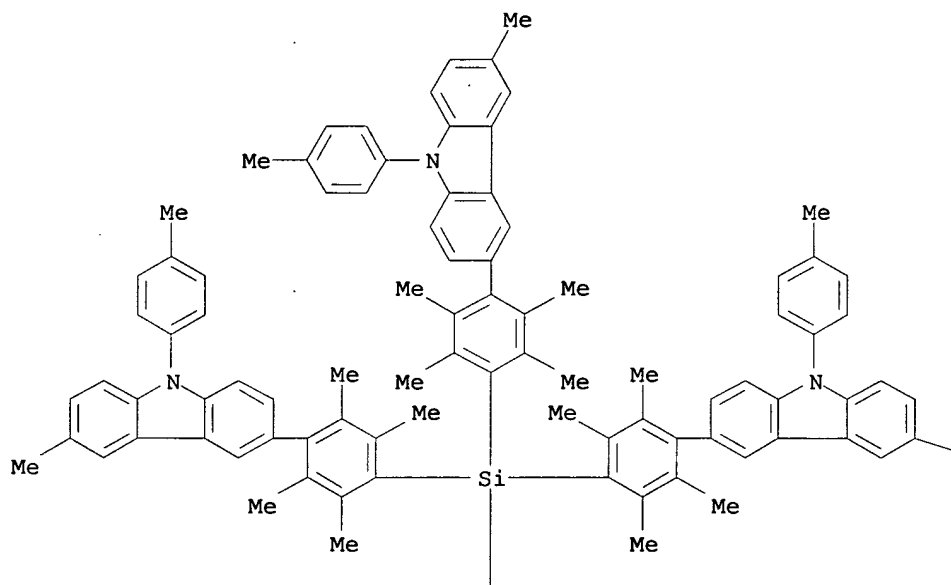
RN 694534-47-9 HCAPLUS

CN Tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaen-5-amine,
11-(9H-carbazol-9-yl)-N-1-naphthalenyl-N-phenyl-13,15-bis(2,4,6-
trimethylphenyl)- (9CI) (CA INDEX NAME)



RN 722547-84-4 HCAPLUS
CN 9H-Carbazole, 3,3',3'',3'''-[silanetetrayltetrakis(2,3,5,6-
tetramethyl-4,1-phenylene)]tetrakis[6-methyl-9-(4-methylphenyl)-
(9CI) (CA INDEX NAME)

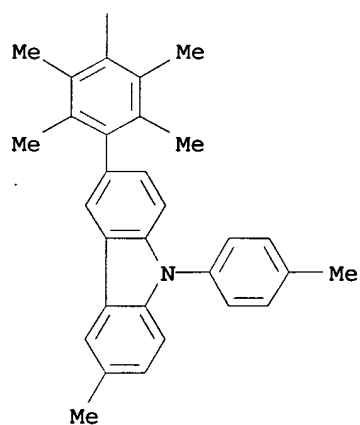
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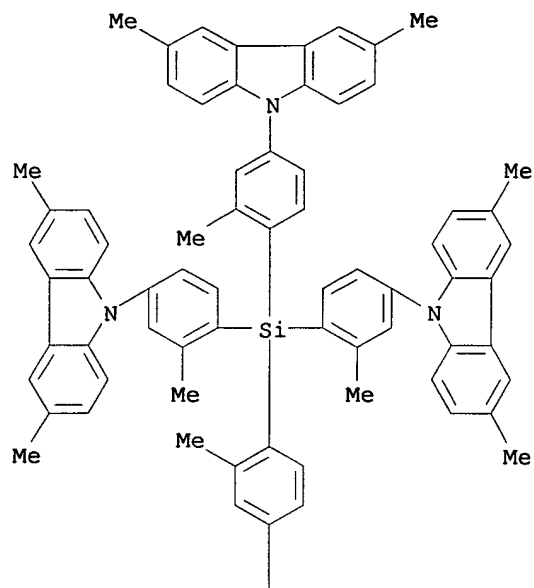
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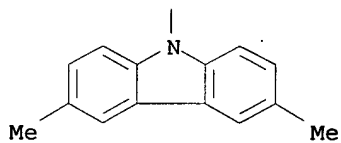


RN 722547-85-5 HCAPLUS
 CN 9H-Carbazole, 9,9',9'',9'''-[silanetetrayltetrakis(3-methyl-4,1-phenylene)]tetrakis[3,6-dimethyl- (9CI) (CA INDEX NAME)]

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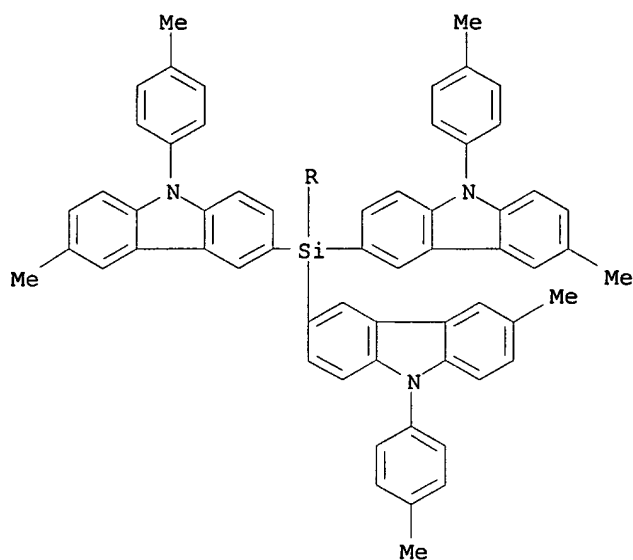


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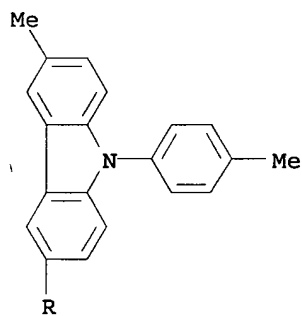


RN 722547-87-7 HCAPLUS
CN 9H-Carbazole, 3,3',3'',3'''-silanetetrayltetrakis[6-methyl-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)

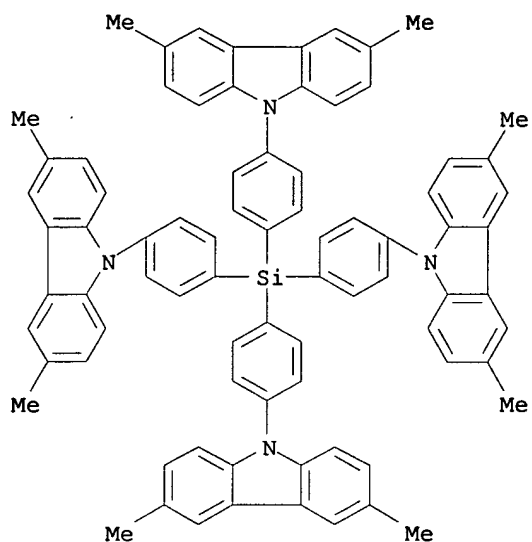
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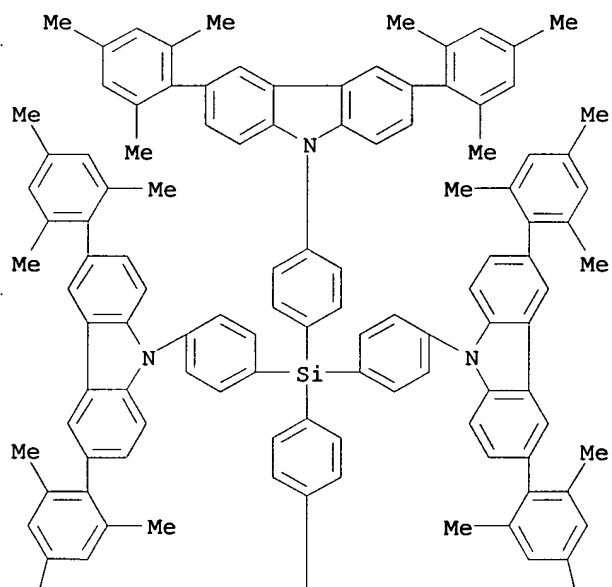


RN 722547-88-8 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9'''-(silanetetrayltetra-4,1-phenylene)tetrakis[3,6-dimethyl- (9CI) (CA INDEX NAME)

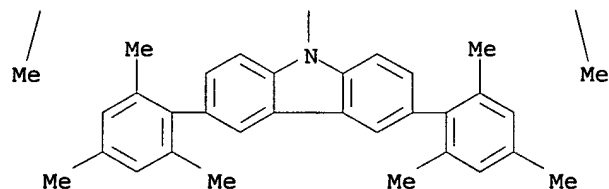


RN 722547-89-9 HCAPLUS
 CN 9H-Carbazole, 9,9',9'',9'''-(silanetetrayltetra-4,1-phenylene)tetrakis[3,6-bis(2,4,6-trimethylphenyl)-(9CI) (CA INDEX NAME)

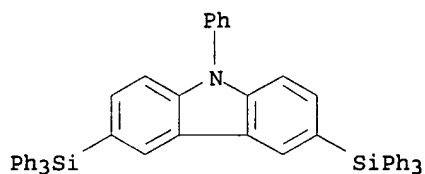
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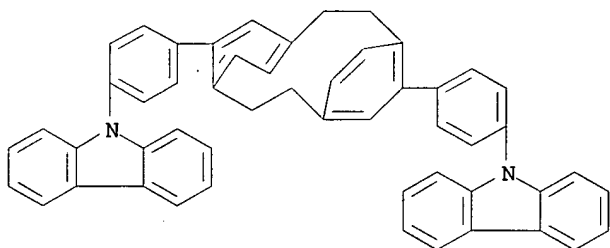
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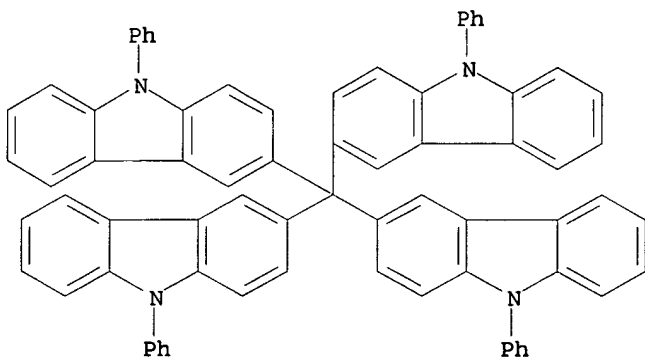
RN 754231-83-9 HCAPLUS
 CN 9H-Carbazole, 9-phenyl-3,6-bis(triphenylsilyl)- (9CI) (CA INDEX NAME)



RN 754231-84-0 HCAPLUS
 CN 9H-Carbazole, 9,9'-(tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaene-5,11-diyl-di-4,1-phenylene)bis- (9CI) (CA INDEX NAME)



RN 754231-87-3 HCAPLUS
 CN 9H-Carbazole, 3,3',3'',3'''-methanetetrayltetrakis[9-phenyl]- (9CI) (CA INDEX NAME)

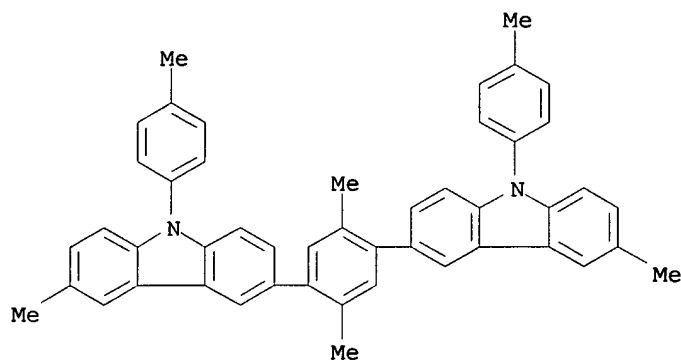


IT 754231-95-3P
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(long-life white-emitting org. LED contg. azacyclic
phosphorescent dopants and showing high luminescent
efficiency)

RN 754231-95-3 HCAPLUS

CN 9H-Carbazole, 3,3'-(2,5-dimethyl-1,4-phenylene)bis[6-methyl-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



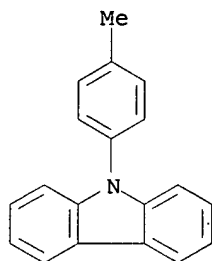
IT 19264-73-4P 121073-89-0P 357437-74-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
(Preparation); RACT (Reactant or reagent)

(long-life white-emitting org. LED contg. azacyclic
phosphorescent dopants and showing high luminescent
efficiency)

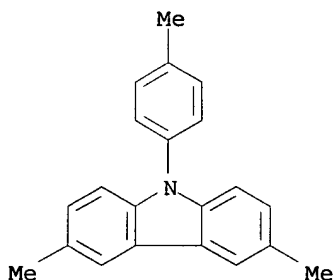
RN 19264-73-4 HCAPLUS

CN 9H-Carbazole, 9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



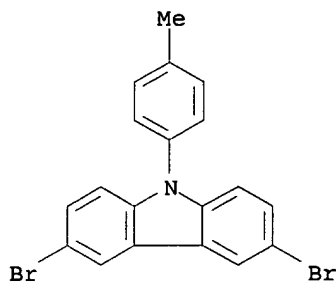
RN 121073-89-0 HCAPLUS

CN 9H-Carbazole, 3,6-dimethyl-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 357437-74-2 HCAPLUS

CN 9H-Carbazole, 3,6-dibromo-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14
ICS C09K011-06; G02F001-1335; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 25, 28, 29, 38, 74
- ST white emitting electroluminescent life luminescent efficiency;
phosphorescent azacyclic dopant luminescent efficiency org
LED; LCD light source white emitting electrophosphorescent
- IT Luminescent substances
(electroluminescent, electrophosphorescent, host-guest; long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT **Phosphorescent** substances
(electrophosphorescent; long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT Fluorescent substances
(fluorine- or nitrogen-contg.; long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT Liquid crystal displays
(light sources for; long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT Electric apparatus
(long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT Organometallic compounds
Polysilanes
RL: DEV (Device component use); USES (Uses)
(long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT Electroluminescent devices
(white-emitting, electrophosphorescent; long-life white-emitting org. LED contg. azacyclic **phosphorescent** dopants and showing high luminescent efficiency)
- IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]
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 645399-37-7 650606-83-0 650606-86-3 650606-88-5 650606-89-6
 650606-91-0 650606-97-6 655236-05-8 655236-07-0 655236-12-7
 655240-48-5 655240-49-6 663219-23-6
 663219-25-8 663219-28-1 663219-29-2
 663219-39-4 666839-78-7 666839-81-2
 666839-86-7 666839-89-0 666839-92-5
 669072-36-0 669072-52-0 669072-60-0 669072-72-4
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 688315-86-8 688315-87-9 688315-88-0 688315-89-1
 694534-34-4 694534-41-3 694534-43-5
 694534-44-6 694534-45-7 694534-46-8
 694534-47-9 705941-97-5 705942-24-1 705973-76-8
 705973-79-1 705973-80-4 705973-82-6 722547-84-4
 722547-85-5 722547-86-6 722547-87-7
 722547-88-8 722547-89-9 754231-79-3
 754231-80-6 754231-82-8 754231-83-9 754231-84-0
 754231-87-3 754231-88-4 754231-89-5 754231-90-8
 754231-91-9 754231-92-0 754231-94-2

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting org. LED contg. azacyclic
 phosphorescent dopants and showing high luminescent
 efficiency)

IT 5660-43-5P 51445-93-3P 115533-27-2P 174291-37-3P
 288297-90-5P 344564-96-1P 522630-06-4P 522630-07-5P
 557787-52-7P 567625-71-2P 567625-76-7P 567625-77-8P
 569674-88-0P 569674-97-1P 643753-84-8P 669072-95-1P
 676553-36-9P 705941-83-9P 754231-93-1P 754231-95-3P
 754232-01-4P 754980-36-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)

(long-life white-emitting org. LED contg. azacyclic
 phosphorescent dopants and showing high luminescent
 efficiency)

IT 604-53-5P, 1,1'-Binaphthalene 5122-94-1P 16761-23-2P
 19264-73-4P 33170-68-2P 49610-33-5P 50668-21-8P,
 3-Iodo-9-ethylcarbazole 77547-84-3P 85137-69-5P 103989-84-0P
 121073-89-0P 146232-42-0P 155886-75-2P 155886-83-2P
 263164-82-5P 288297-93-8P 288297-94-9P 288297-95-0P
 357437-74-2P 363607-69-6P 522630-41-7P 522630-42-8P
 567625-82-5P 567625-83-6P 643753-87-1P 643753-91-7P
 754232-02-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

(long-life white-emitting org. LED contg. azacyclic
 phosphorescent dopants and showing high luminescent
 efficiency)

IT 62-53-3, Aniline, reactions 67-64-1, Acetone, reactions 76-86-8,
 Triphenylchlorosilane 86-74-8, Carbazole 90-11-9,
 1-Bromonaphthalene 90-90-4, 4-Bromobenzophenone 92-66-0,
 4-Bromobiphenyl 95-54-5, 1,2-Phenylenediamine, reactions

98-80-6, Phenylboronic acid 99-97-8, N,N-Dimethyl-p-tolylamine
 100-20-9, Terephthaloyl dichloride 106-37-6, 1,4-Dibromobenzene
 106-38-7, 4-Bromotoluene 108-36-1, 1,3-Dibromobenzene 108-94-1,
 Cyclohexanone, reactions 108-98-5, Thiophenol, reactions
 110-13-4, 2,5-Hexanedione 119-61-9, Benzophenone, reactions
 119-93-7 121-43-7, Trimethoxyborane 132-32-1,
 3-Amino-9-ethylcarbazole 302-01-2, Hydrazine, reactions
 495-71-6, 1,2-Dibenzoylthane 523-27-3, 9,10-Dibromoanthracene
 583-53-9, 1,2-Dibromobenzene 619-42-1, Methyl 4-bromobenzoate
 623-27-8, 1,4-Diformylbenzene 624-92-0, Dimethyl disulfide
 626-19-7, 1,3-Benzenedicarboxaldehyde 762-04-9, Diethyl phosphite
 826-81-3, 2-Methyl-8-quinolinol 885-39-2 931-50-0,
 Cyclohexylmagnesium bromide 1003-09-4, 2-Bromothiophene
 1074-24-4, 2,5-Dibromo-p-xylene 1592-95-6, 3-BromoCarbazole
 1730-04-7, 1,8-Diiodonaphthalene 1733-63-7 2586-62-1,
 1-Bromo-2-methylnaphthalene 2592-73-6, 1,1-Dibromo-2,2-
 diphenylethylene 4546-04-7 6999-03-7, 1-Bromo-4-
 trimethylsilylbenzene 10489-97-1, 1,1-Dibromocyclohexane
 38218-24-5, Indium isopropoxide 51044-13-4, 4-
 Bromobenzyltriphenylphosphonium bromide 65810-18-6,
 1,3,5-Cycloheptatriene-1-carboxaldehyde 95902-10-6,
 3-Bromobenzyltriphenylphosphonium bromide 643753-90-6
 754232-00-3

RL: RCT (Reactant); RACT (Reactant or reagent)
 (long-life white-emitting org. LED contg. azacyclic
 phosphorescent dopants and showing high luminescent
 efficiency)

L33 ANSWER 9 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:267211 HCAPLUS

DOCUMENT NUMBER: 140:311669

TITLE: Organic electroluminescent compositions

INVENTOR(S): Lamansky, Sergey A.; Baetzold, John P.;
 McCormick, Fred B.; Nirmal, Manoj; Roberts,
 Ralph R.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 31 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|--------------|
| US 2004062947 | A1 | 20040401 | US 2002-254237 | 200209 25 |
| WO 2004099338 | A2 | 20041118 | WO 2003-US29007 | 200309 15 |
| WO 2004099338 | A3 | 20050106 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| AU 2003304084 | A1 | 20041126 | AU 2003-304084 | |

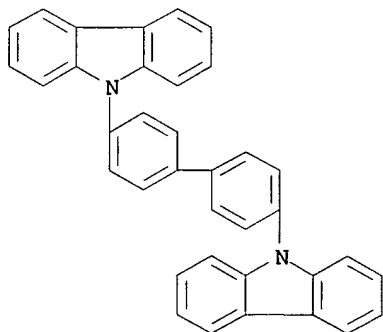
OTHER SOURCE(S): MARPAT 140:311669

AB Org. electroluminescent compns. are described which comprise a charge transport matrix comprising ≥ 1 electron transport material; ≥ 1 non-polymeric emissive dopant; and ≥ 1 tertiary arom. amine. Preferably, the tertiary amine has a hole mobility greater than about .gtorsim.10-5 cm/s and an ionization potential of 4.8-5.4 eV. Org. electroluminescent devices, including displays, employing the materials are also described. Methods of making org. electroluminescent devices are described which entail selectively transferring the compns. of from a donor sheet to a receptor substrate; donor sheets suitable for the process are also described.

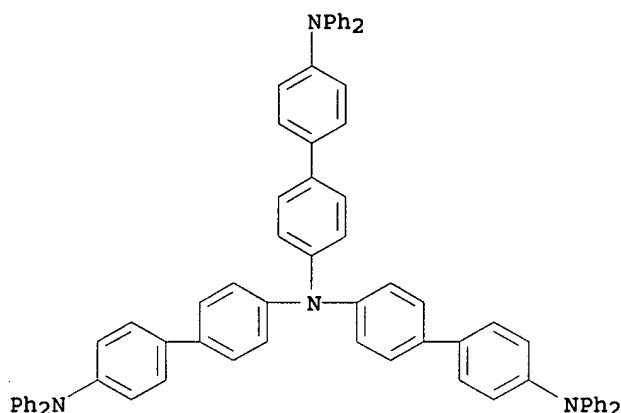
IT 58328-31-7, 4,4'-Bis(carbazol-9-yl)biphenyl
128396-99-6
RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent compns. comprising electron transport materials and emitting dopants and tertiary arom. amines and devices using them and their prodn. using thermal transfer)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



Ross Shipe EIC 1700 Remsen 4B31 571/272-6018



IC ICM H05B033-14
ICS C09K011-06
INCL 428690000; 428917000; 313504000; 252301160; 252301350
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76
IT 9003-53-6, Polystyrene 25067-59-8, Poly(9-vinylcarbazole)
31248-39-2 58328-31-7, 4,4'-Bis(carbazol-9-yl)biphenyl
105389-36-4 123847-85-8 124729-98-2 128396-99-6
185690-41-9
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent compns. comprising electron transport materials and emitting dopants and tertiary arom. amines and devices using them and their prodn. using thermal transfer)

L33 ANSWER 10 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:203785 HCAPLUS
DOCUMENT NUMBER: 140:254983
TITLE: Spirobifluorene dyes and organic electroluminescent devices using them
INVENTOR(S): Suzuki, Koichi; Hiraoka, Mizuho; Senoo, Akihiro; Yamada, Naoki; Negishi, Chika; Saito, Akihito
PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan
SOURCE: PCT Int. Appl., 91 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

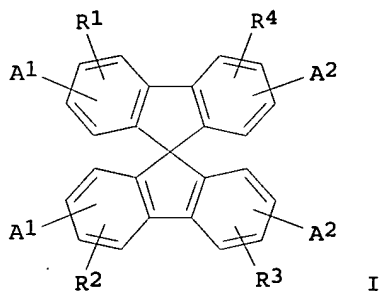
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2004020373 | A1 | 20040311 | WO 2003-JP10258 | 20030812 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,

| NE, SN, TD, TG | | | | | |
|------------------------|----|----------|-----------------|---|--------------|
| JP 2004083483 | A2 | 20040318 | JP 2002-246601 | | 200208 27 |
| AU 2003253441 | A1 | 20040319 | AU 2003-253441 | | 200308 12 |
| US 2006134425 | A1 | 20060622 | US 2005-525327 | | 200502 22 |
| PRIORITY APPLN. INFO.: | | | JP 2002-246601 | A | 200208 27 |
| | | | WO 2003-JP10258 | W | 200308 12 |

OTHER SOURCE(S): MARPAT 140:254983
GI



AB Provided are novel spirobifluorenes (I; A1, A2 = optionally substituted polycyclic arom. of heterocyclic group; R1-R4 = H, org. group, substituted amino, CN, halogen). Org. electroluminescence devices using the spiro compd. have an optical output with an extremely high efficiency and a high luminance, and an extremely high durability. In an example, 2,2',7,7'-tetrabromo-9,9'-spirobifluorene was treated with 9,9-dimethylfluorene-2-boronic acid in the presence of Pd(PPh3)4 to give a spirobifluorene compd. contg. 4 dimethylfluorene groups.

IT 669078-03-9

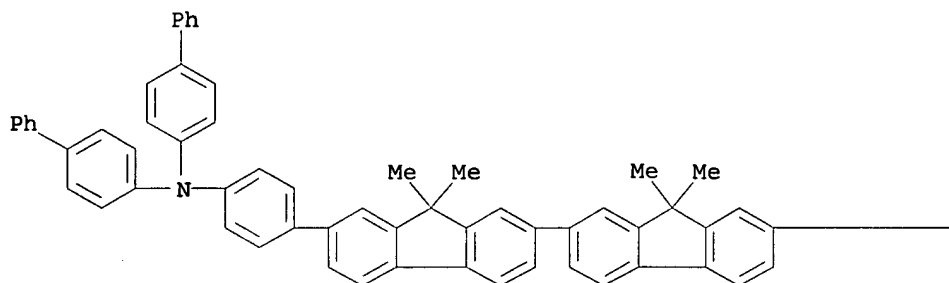
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(in org. electroluminescent devices contg. spirobifluorene dyes)

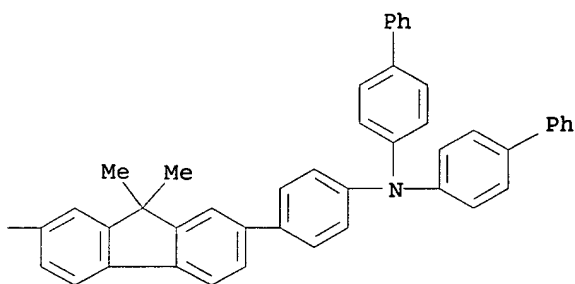
RN 669078-03-9 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N,N'-[(9,9,9',9',9'',9'''-hexamethyl[2,2':7',2''-ter-9H-fluorene]-7,7''-diyl)di-4,1-phenylene]bis[N-[1,1'-biphenyl]-4-yl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 214078-86-1P

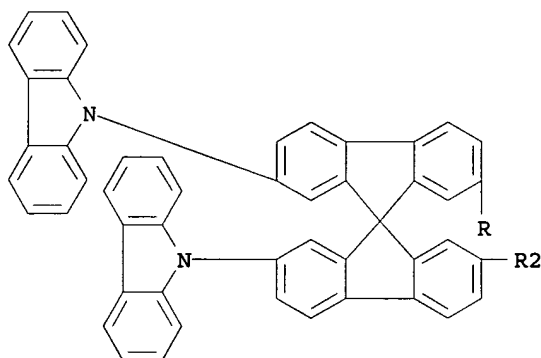
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)

(spirobifluorene dyes and org. electroluminescent devices using
them)

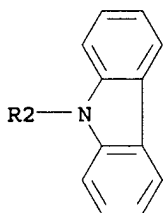
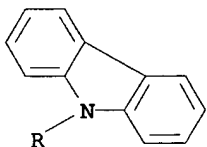
RN 214078-86-1 HCAPLUS

CN 9H-Carbazole, 9,9',9'',9'''-(9,9'-spirobi[9H-fluorene]-2,2',7,7'-
tetrayl)tetrakis- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



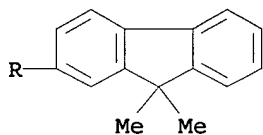
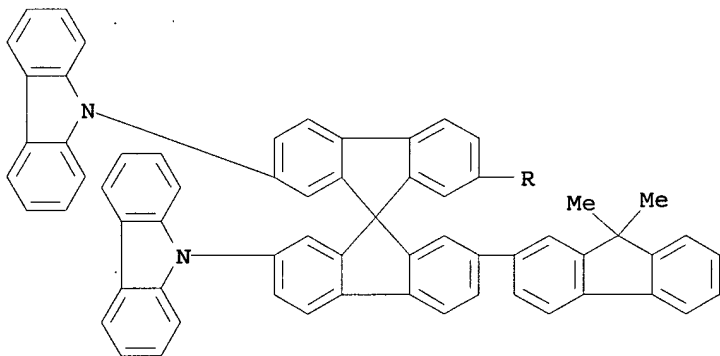
IT 669077-82-1 669078-06-2 669078-07-3

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(spirobifluorene dyes and org. electroluminescent devices using them)

RN 669077-82-1 HCAPLUS

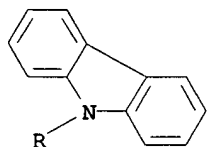
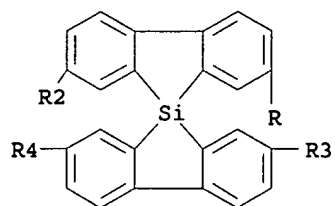
CN 9H-Carbazole, 9,9'-[7,7'-bis(9,9-dimethyl-9H-fluoren-2-yl)-9,9'-spirobi[9H-fluorene]-2,2'-diyl]bis- (9CI) (CA INDEX NAME)



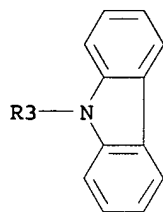
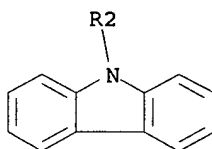
RN 669078-06-2 HCAPLUS

CN 9H-Carbazole, 9,9',9'',9'''-(9,9'-spirobi[9H-9-silafluorene]-2,2',7,7'-tetrayl)tetrakis- (9CI) (CA INDEX NAME)

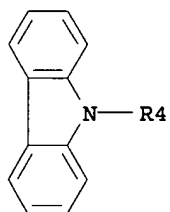
PAGE 1-A



PAGE 2-A

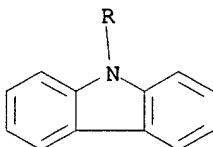
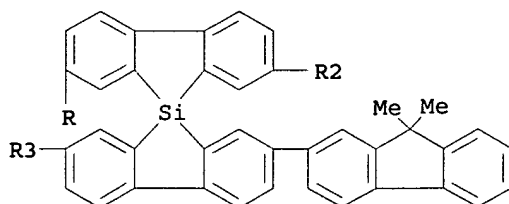


PAGE 3-A

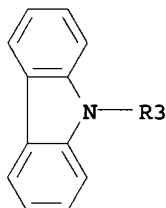
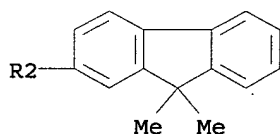


RN 669078-07-3 HCAPLUS
CN 9H-Carbazole, 9,9'-[7,7'-(9,9-dimethyl-9H-fluoren-2-yl)-9,9'-
spirobi[9H-9-silafluorene]-2,2'-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07C013-72
 ICS C07C025-22; C07C255-52; C07D209-86; C07D219-02; C07D471-04;
 C07F007-08; C07F007-12; C09K011-06; H05B033-14; H05B033-22

CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and
 Photographic Sensitizers)
 Section cross-reference(s): 25, 29, 74, 76

IT 143886-09-3 203459-05-6 216454-35-2 228871-85-0 239475-91-3
 361486-60-4 522653-17-4 607739-77-5 607739-84-4 669016-10-8
 669016-11-9 669016-12-0 669016-13-1 669016-14-2 669016-15-3
 669016-16-4 669016-17-5 669016-18-6 669016-19-7 669016-20-0
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 669016-26-6 669016-27-7 669016-28-8 669016-29-9 669016-30-2
 669077-94-5 669077-95-6 669078-02-8 **669078-03-9**
 669078-04-0
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (in org. electroluminescent devices contg. spirobifluorene dyes)

IT **214078-86-1P** 608130-98-9P 668994-20-5P 669077-87-6P
 669078-05-1P
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)

(spirobifluorene dyes and org. electroluminescent devices using them)

IT 669077-72-9 669077-73-0 669077-74-1 669077-75-2 669077-76-3
669077-77-4 669077-78-5 669077-79-6 669077-80-9 669077-81-0
669077-82-1 669077-83-2 669077-84-3 669077-85-4
669077-86-5 669077-88-7 669077-89-8 669077-90-1 669077-91-2
669077-92-3 669077-93-4 669078-06-2 669078-07-3

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(spirobifluorene dyes and org. electroluminescent devices using them)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L33 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118662 HCAPLUS

DOCUMENT NUMBER: 140:172301

TITLE: Organic electroluminescent elements with improved brightness and durability and color displays using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2004047443 | A2 | 20040212 | JP 2003-134267 | 20030513 |
| | | | | 20020515 |

PRIORITY APPLN. INFO.:

JP 2002-140103 A

OTHER SOURCE(S): MARPAT 140:172301

AB The elements contain , R1R2R3N [R1-3 = substituted p-A-Ph; A = (un)substituted arom. hydrocarbyl], preferably in hole-transport layers. The elements may have light-emitting layers contg. phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent compds. having max. fluorescence wavelength longer than max. emission wavelength of the complexes.

IT 405171-49-5 655240-48-5 655240-55-4

655240-56-5

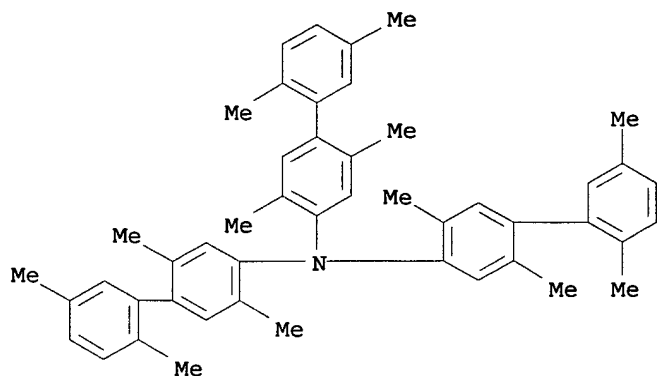
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(hole-transport layer; org. EL elements contg.

triphenylamine-based compds. with improved brightness and durability for displays)

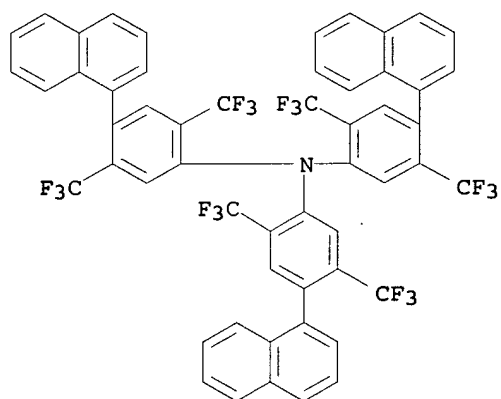
RN 405171-49-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 2,2',5,5'-tetramethyl-N,N-bis(2,2',5,5'-tetramethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



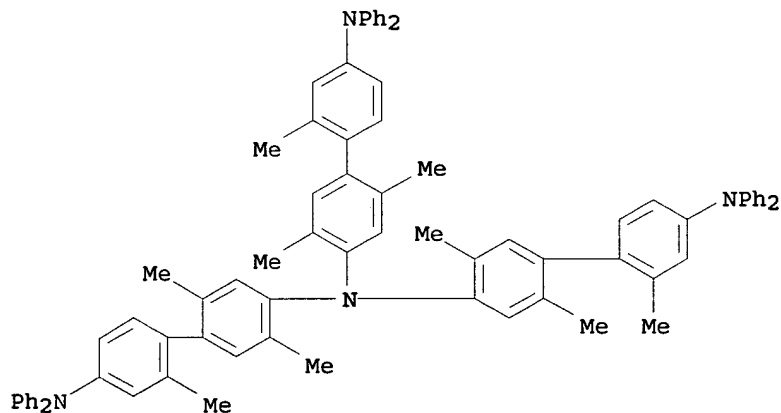
RN 655240-48-5 HCAPLUS

CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)

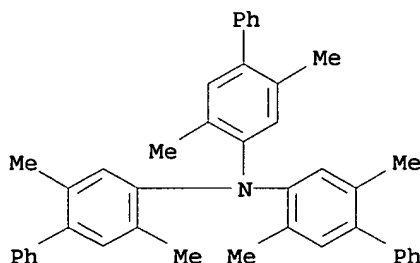


RN 655240-55-4 HCAPLUS

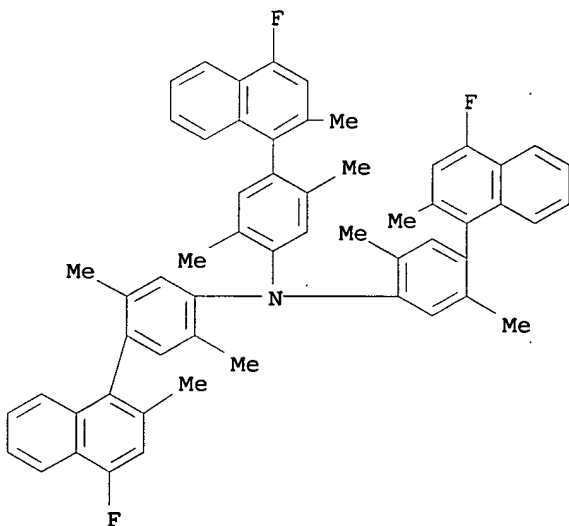
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)-2,2',5-trimethyl[1,1'-biphenyl]-4-yl]-2,2',5-trimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



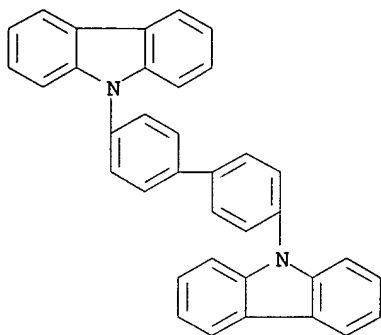
RN 655240-56-5 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, N,N-bis(2,5-dimethyl[1,1'-biphenyl]-4-yl)-2,5-dimethyl- (9CI) (CA INDEX NAME)



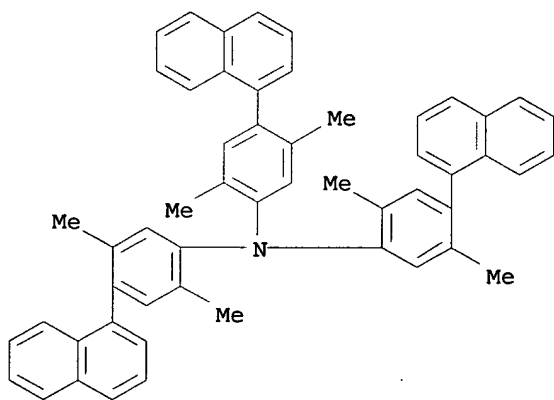
IT 655240-47-4
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (hole-transport or light-emitting layer; org. EL elements contg. triphenylamine-based compds. with improved brightness and durability for displays)
 RN 655240-47-4 HCAPLUS
 CN Benzenamine, 4-(4-fluoro-2-methyl-1-naphthalenyl)-N,N-bis[4-(4-fluoro-2-methyl-1-naphthalenyl)-2,5-dimethylphenyl]-2,5-dimethyl- (9CI) (CA INDEX NAME)



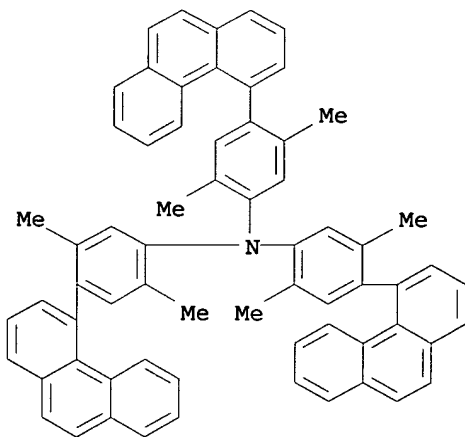
IT 58328-31-7 363607-70-9 405172-39-6
 405173-85-5 655240-58-7 655240-59-8
 655240-65-6
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (light-emitting layer; org. EL elements contg. triphenylamine-based compds. with improved brightness and durability for displays)
 RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



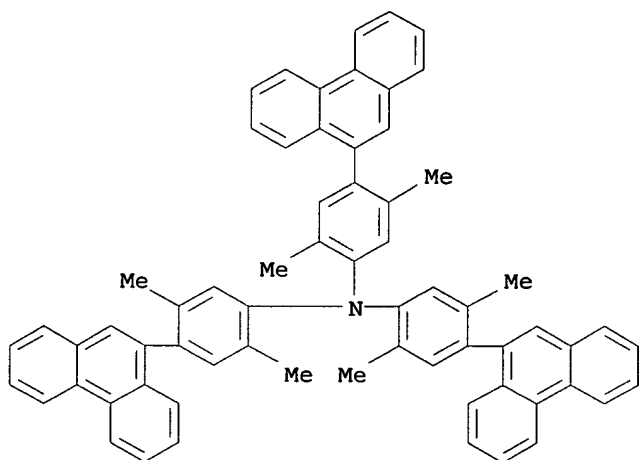
RN 363607-70-9 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(1-naphthalenyl)phenyl]-2,5-dimethyl-4-(1-naphthalenyl)- (9CI) (CA INDEX NAME)



RN 405172-39-6 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(4-phenanthrenyl)phenyl]-2,5-dimethyl-4-(4-phenanthrenyl)- (9CI) (CA INDEX NAME)

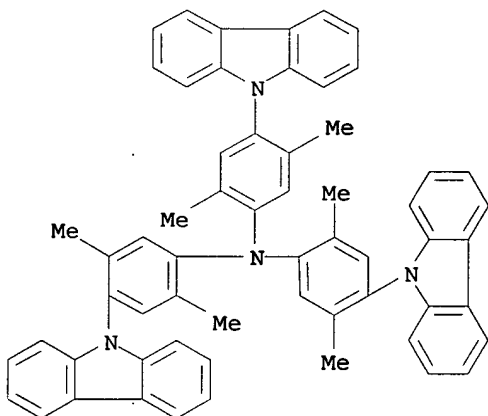


RN 405173-85-5 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



RN 655240-58-7 HCAPLUS

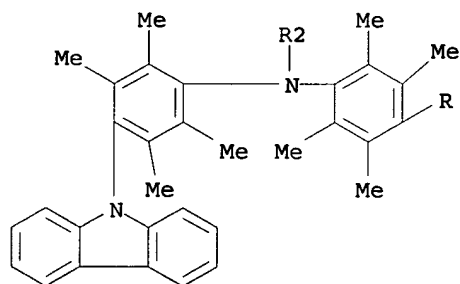
CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,5-dimethylphenyl]-2,5-dimethyl- (9CI) (CA INDEX NAME)



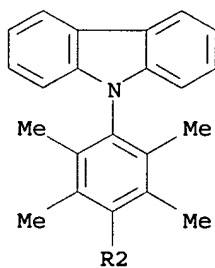
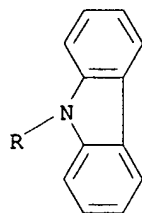
RN 655240-59-8 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,3,5,6-tetramethylphenyl]-2,3,5,6-tetramethyl- (9CI) (CA INDEX NAME)

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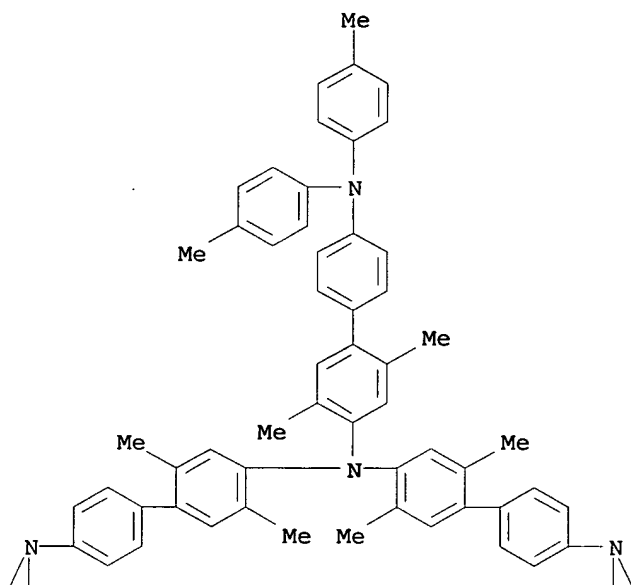


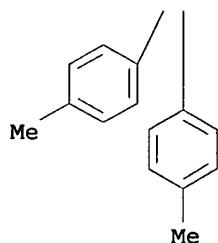
PAGE 2-A



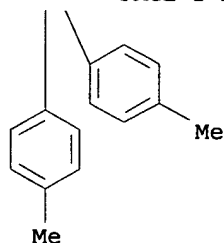
RN 655240-65-6 HCAPLUS
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(4-methylphenyl)amino]-2,5-dimethyl[1,1'-biphenyl]-4-yl]-2,5-dimethyl-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

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PAGE 2-A



IC ICM H05B033-14
ICS C09K011-06

CC 74-13 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

IT 405171-49-5 655240-48-5 655240-49-6
655240-50-9 655240-51-0 655240-52-1 655240-53-2 655240-54-3
655240-55-4 655240-56-5 655240-57-6
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(hole-transport layer; org. EL elements contg.
triphenylamine-based compds. with improved brightness and
durability for displays)

IT 405171-87-1 655240-47-4
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(hole-transport or light-emitting layer; org. EL elements contg.
triphenylamine-based compds. with improved brightness and
durability for displays)

IT 58328-31-7 363607-70-9 405172-39-6
405173-85-5 655240-58-7 655240-59-8
655240-60-1 655240-61-2 655240-62-3 655240-63-4 655240-64-5
655240-65-6
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(light-emitting layer; org. EL elements contg.
triphenylamine-based compds. with improved brightness and
durability for displays)

L33 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118661 HCAPLUS

DOCUMENT NUMBER: 140:172300

TITLE: Organic electroluminescent elements with
improved brightness and durability and displays
using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama,
Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2004047442 | A2 | 20040212 | JP 2003-132872 | 200305 12 |

PRIORITY APPLN. INFO.: JP 2002-138307 A

200205

14

OTHER SOURCE(S): MARPAT 140:172300

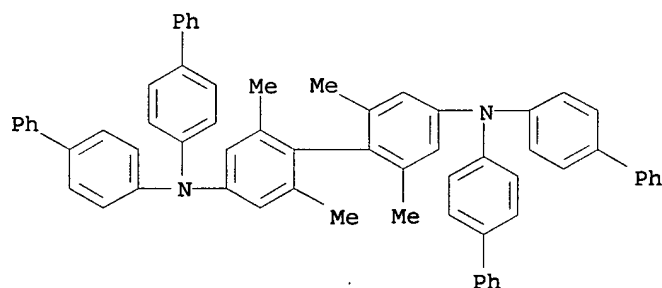
AB The elements contain R1R2NQ1Q2NR3R4 [R1-4 = (un)substituted Ph; Q1,2 = (un)substituted p-phenylene; Q1 = Q2 ≠ p-phenylene], preferably in hole-transport layers. The elements may have light-emitting layers contg. phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent compds. having max. fluorescence wavelength longer than max. emission wavelength of the complexes.

IT 655236-06-9

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(hole-transport or light-emitting layer; org. EL elements contg. tetraphenylbenzidine-based compds. with improved brightness and durability for displays)

RN 655236-06-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)-2,2',6,6'-tetramethyl- (9CI) (CA INDEX NAME)

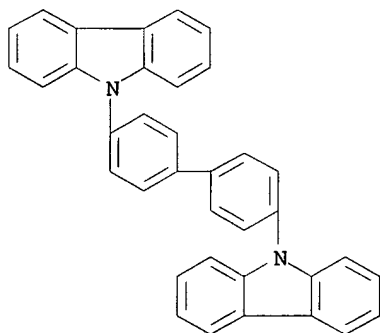


IT 58328-31-7 655236-17-2

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(light-emitting layer; org. EL elements contg. tetraphenylbenzidine-based compds. with improved brightness and durability for displays)

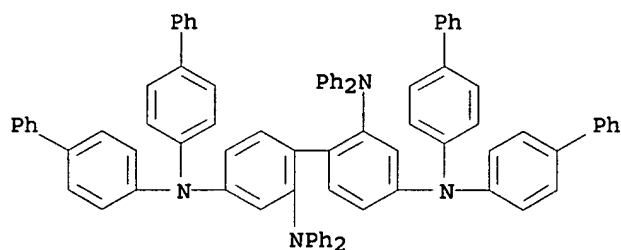
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 655236-17-2 HCAPLUS

CN [1,1'-Biphenyl]-2,2',4,4'-tetramine, N4,N4,N4',N4'-tetrakis([1,1'-biphenyl]-4-yl)-N2,N2,N2',N2'-tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22
ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

IT 453590-46-0 478262-76-9 478370-42-2 **655236-06-9**
655236-09-2 655236-13-8
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(hole-transport or light-emitting layer; org. EL elements contg.
tetraphenylbenzidine-based compds. with improved brightness and
durability for displays)

IT **58328-31-7** 453590-45-9 478262-77-0 478370-41-1
655236-14-9 655236-15-0 655236-16-1 **655236-17-2**
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(light-emitting layer; org. EL elements contg.
tetraphenylbenzidine-based compds. with improved brightness and
durability for displays)

L33 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:874573 HCAPLUS

DOCUMENT NUMBER: 139:371625

TITLE: Organic electroluminescent device and its
production method

INVENTOR(S): Suzurizato, Yoshiyuki; Yamada, Taketoshi; Kita,
Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

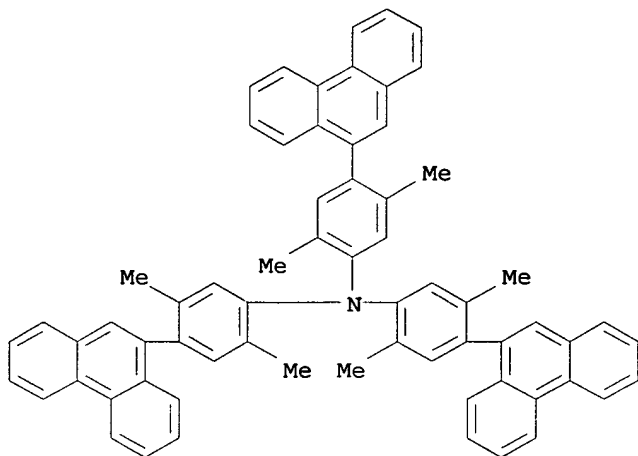
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

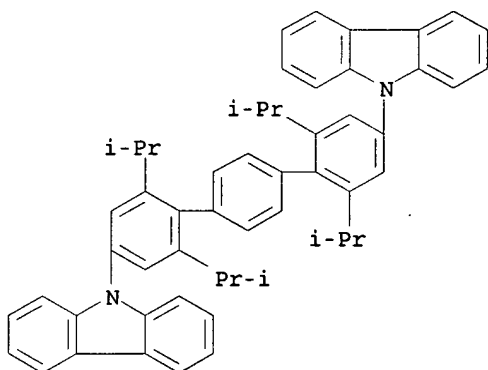
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2003317946 | A2 | 20031107 | JP 2002-120841 | 200204 23 |
| PRIORITY APPLN. INFO.: | | | | 200204 23 |

AB The invention relates to an org. electroluminescent device comprising org. layers sandwiched between an anode and a cathode, wherein, at least, one of the org. layers is formed by a wet process, such as ink-jet printing, spin coating, etc., using the soln. contg. the org. compd. having the glass transition temp. in 80-250 °C and purified by a sublimation method. One of the org. layers prep'd. by the wet process may be an electroluminescent layer that comprises a host material and a **phosphorescent** guest material.

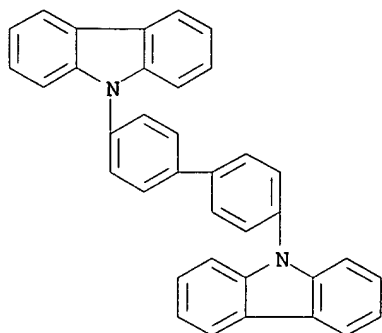
IT 405173-85-5P 620626-18-8P
 RL: DEV (Device component use); PNU (Preparation, unclassified);
 PREP (Preparation); USES (Uses)
 (host in light-emitting layer; org. electroluminescent device)
 RN 405173-85-5 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



RN 620626-18-8 HCAPLUS
 CN 9H-Carbazole, 9,9'-[2,2'',6,6''-tetrakis(1-methylethyl)[1,1':4',1''-terphenyl]-4,4''-diyl]bis- (9CI) (CA INDEX NAME)



IT 58328-31-7P, CBP
 RL: DEV (Device component use); PNU (Preparation, unclassified);
 PREP (Preparation); USES (Uses)
 (org. electroluminescent device)
 RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



IC ICM H05B033-10
ICS H05B033-14
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
IT Coating materials
Electroluminescent devices
Phosphorescent substances
(org. electroluminescent device)
IT 405173-85-5P 612519-47-8P 620626-18-8P
RL: DEV (Device component use); PNU (Preparation, unclassified);
PREP (Preparation); USES (Uses)
(host in light-emitting layer; org. electroluminescent device)
IT 2085-33-8P, Al 8q 4733-39-5P 7429-90-5P, Aluminum, uses
7789-24-4P, Lithium fluoride, uses 50926-11-9P, ITO
58328-31-7P, CBP
RL: DEV (Device component use); PNU (Preparation, unclassified);
PREP (Preparation); USES (Uses)
(org. electroluminescent device)

L33 ANSWER 14 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:817598 HCAPLUS
DOCUMENT NUMBER: 139:314295
TITLE: Organic electroluminescence element
INVENTOR(S): Oshiyama, Tomohiro; Kita, Hiroshi; Yamada, Taketoshi
PATENT ASSIGNEE(S): Konica Corporation, Japan
SOURCE: Eur. Pat. Appl., 22 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| EP 1353388 | A2 | 20031015 | EP 2003-7431 | 20030403 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| JP 2004006287 | A2 | 20040108 | JP 2003-90803 | 20030328 |
| US 2003198831 | A1 | 20031023 | US 2003-410312 | 20030409 |

PRIORITY APPLN. INFO.: JP 2002-110303 A

200204
12

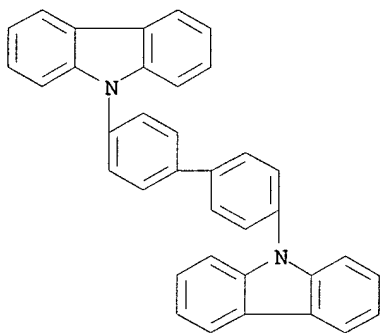
AB An org. electroluminescence element is disclosed which comprises a hole transporting layer contg. a hole transporting material, a light emission layer contg. a host compd. and a **phosphorescent** compd., a hole blocking layer, and an electron transporting layer, the host compd. having a band gap of 3.3-5 eV, and having a mol. wt. of ≥ 500 , and relation $c < d$ being satisfied, wherein c (eV) represents a difference between energy level of LUMO in the hole blocking layer and energy level of LUMO in the light emission layer and d (eV) represents a difference between energy level of HOMO in the hole blocking layer and energy level of HOMO in the light emission layer.

IT 58328-31-7, 4,4'-Bis(N-carbazolyl)-1,1'-biphenyl
219303-85-2, 2,4,4',4''-Tetrakis(N-carbazolyl)triphenylamine
405173-85-5

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent element contg.)

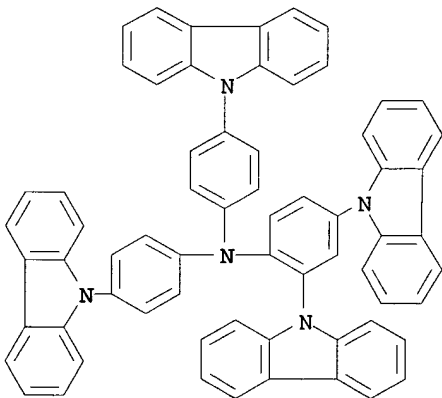
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



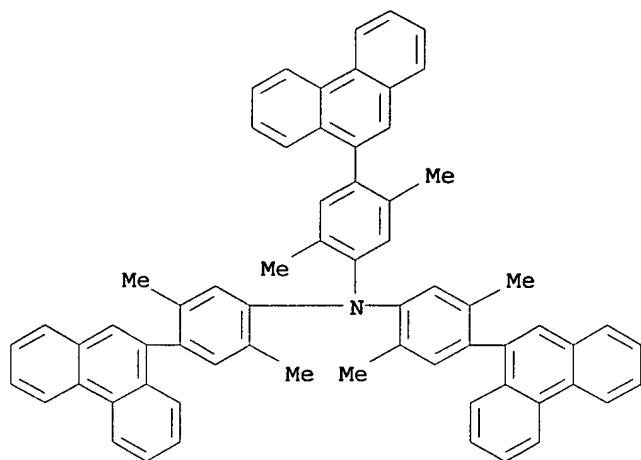
RN 219303-85-2 HCAPLUS

CN Benzenamine, 2,4-bis(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 405173-85-5 HCAPLUS

CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



IC ICM H01L051-30
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76
 ST org electroluminescent device **phosphorescent** compd
 electron hole transporting layer
 IT **Phosphorescent** substances
 (in org. electroluminescent element)
 IT 2085-33-8, Tris(8-hydroxyquinolino)aluminum 4733-39-5,
 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 16152-10-6,
 4-(1-Naphthyl)-3,5-diphenyl-1,2,4-triazole 31248-39-2 52309-01-0
 58328-31-7, 4,4'-Bis(N-carbazolyl)-1,1'-biphenyl
 65181-79-5, 2,2'-Dimethyl-4,4'-[N,N'-di(3-methylphenyl)-N,N'-
 diphenylamino]-1,1'-biphenyl 88821-71-0 94928-86-6
 105465-14-3, 3,3'-Dimethyl-4,4'-[N,N',N'-tetrakis(3-
 methylphenyl)amino]-1,1'-biphenyl 123847-85-8, α -NPD
 149005-33-4 219303-85-2, 2,4,4',4''-Tetrakis(N-
 carbazolyl)triphenylamine 337526-85-9, Acetylacetonatobis[2-(2-
 pyridyl)phenyl]iridium 337526-98-4, Iridium, tris(benzo[h]quinolin-
 10-yl- κ C, κ N)-, (OC-6-22)- 343978-78-9 343978-79-0
 344796-22-1 344796-24-3 376367-93-0 376367-95-2 387859-70-3
 405171-87-1, N,N-Bis[2,5-dimethyl-4-((3-
 methylphenyl)phenylamino)phenyl]-2,5-dimethyl-N'-(3-methylphenyl)-N'-
 phenyl-1,4-benzenediamine 405173-85-5 439899-44-2
 492446-97-6 497097-21-9 567625-80-3 612519-47-8 612519-52-5
 612519-55-8
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent element contg.)

L33 ANSWER 15 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:201565 HCAPLUS
 DOCUMENT NUMBER: 138:245532
 TITLE: Electrophotographic photoreceptor, and image
 forming method, image forming apparatus and
 process cartridge therefor using the
 photoreceptor
 INVENTOR(S): Ikegami, Takaaki; Suzuki, Yasuo; Shimada,
 Tomoyuki; Tamoto, Nozomu; Kami, Hidetoshi
 PATENT ASSIGNEE(S): Ricoh Company, Ltd., Japan
 SOURCE: Eur. Pat. Appl., 84 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. ----- | KIND --- | DATE ----- | APPLICATION NO. ----- | DATE |
|--|-------------|---------------|--------------------------|-------------------|
| EP 1291723 | A2 | 20030312 | EP 2002-20005 | 200209 05 |
| EP 1291723 | A3 | 20030806 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK | | | | |
| JP 2003316063 | A2 | 20031106 | JP 2002-188643 | 200206 27 |
| JP 3568518 | B2 | 20040922 | | |
| CN 1405640 | A | 20030326 | CN 2002-131849 | 200209 06 |
| US 2003194627 | A1 | 20031016 | US 2002-235961 | 200209 06 |
| US 6861188 | B2 | 20050301 | | |
| JP 2004062131 | A2 | 20040226 | JP 2002-313111 | 200210 28 |
| PRIORITY APPLN. INFO.: | | | JP 2001-271060 | A 200109 06 |
| | | | JP 2001-338194 | A 200111 02 |
| | | | JP 2001-367085 | A 200111 30 |
| | | | JP 2002-48616 | A 200202 25 |
| | | | JP 2002-54889 | A 200202 28 |
| | | | JP 2002-54911 | A 200202 28 |
| | | | JP 2002-163547 | A 200206 04 |
| | | | JP 2002-188643 | A 200206 27 |

OTHER SOURCE(S): MARPAT 138:245532

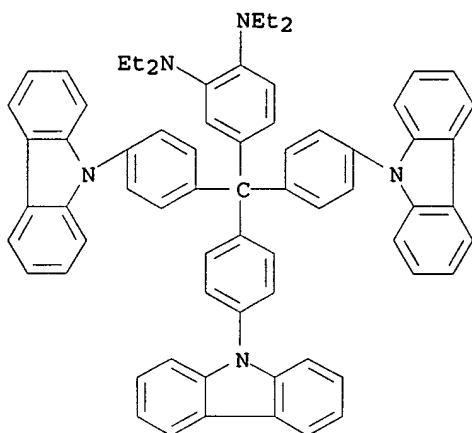
AB The present invention relates to an electrophotog. photoreceptor including at least an electroconductive substrate; and a photosensitive layer located overlying the electroconductive substrate, wherein the photosensitive layer comprises an amino compd. The present invention provides an electrophotog. photoreceptor having high durability against a repeated use for a long time, preventing deterioration of image d. and blurred images and stably producing high quality images.

IT 501367-73-3 501368-02-1

RL: TEM (Technical or engineered material use); USES (Uses)
 (amino compd.; electrophotog. photoreceptor for image forming
 method and image forming app. and process cartridge contg.)

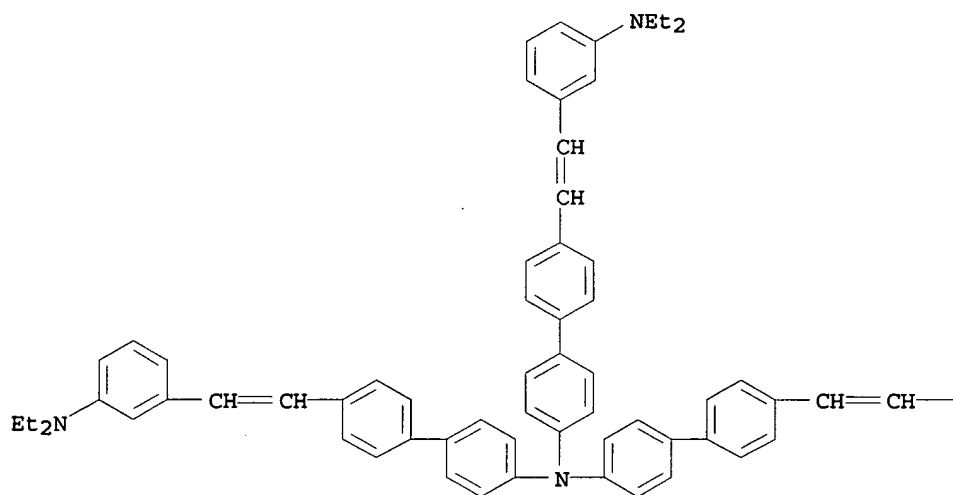
RN 501367-73-3 HCAPLUS

CN 1,2-Benzenediamine, N,N,N',N'-tetraethyl-4-[tris[4-(9H-carbazol-9-yl)phenyl]methyl]- (9CI) (CA INDEX NAME)



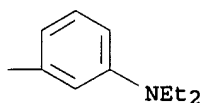
RN 501368-02-1 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-[2-[3-(diethylamino)phenyl]ethenyl]-N,N-bis[4'-[2-[3-(diethylamino)phenyl]ethenyl][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



PAGE 1-A

PAGE 1-B



IC ICM G03G005-06
 CC 74-3 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38
 IT 4483-91-4 10004-39-4 64287-26-9 114037-67-1 501367-56-2
 501367-57-3 501367-58-4 501367-59-5 501367-60-8 501367-61-9
 501367-62-0 501367-63-1 501367-64-2 501367-65-3 501367-66-4
 501367-67-5 501367-68-6 501367-69-7 501367-70-0 501367-71-1
 501367-72-2 **501367-73-3** 501367-74-4 501367-75-5
 501367-76-6 501367-77-7 501367-78-8 501367-79-9 501367-80-2
 501367-81-3 501367-82-4 501367-83-5 501367-84-6 501367-85-7
 501367-86-8 501367-87-9 501367-88-0 501367-89-1 501367-90-4
 501367-91-5 501367-92-6 501367-93-7 501367-94-8 501367-95-9
 501367-96-0 501367-97-1 501367-98-2 501367-99-3 501368-00-9
 501368-01-0 **501368-02-1** 501368-03-2 501368-04-3
 501368-05-4 501368-06-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (amino compd.; electrophotog. photoreceptor for image forming
 method and image forming app. and process cartridge contg.)

L33 ANSWER 16 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:173080 HCAPLUS
 DOCUMENT NUMBER: 138:212610
 TITLE: Multicolor light emission apparatus and
 manufacturing method thereof
 INVENTOR(S): Suzuri, Yoshiyuki; Genda, Kazuo; Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Corporation, Japan
 SOURCE: Eur. Pat. Appl., 46 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|--------------|
| EP 1289015 | A2 | 20030305 | EP 2002-18281 | 200208 22 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK | | | | |
| US 2003076032 | A1 | 20030424 | US 2002-225859 | 200208 22 |

US 6949878 B2 20050927
 JP 2003151769 A2 20030523 JP 2002-241871

200208
 22

PRIORITY APPLN. INFO.:

JP 2001-257720 A

200108
 28

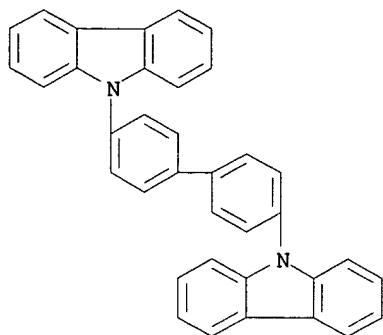
AB Multicolored light-emitting app. comprising a first org. electroluminescent element having a first max. emission wavelength in a blue light wavelength region; and a second org. electroluminescent element having a second max. emission wavelength longer than the first max. emission wavelength are described in which the first org. electroluminescent element comprises a first light emission layer contg. a first host and a first dopant, and the second org. electroluminescent element comprises a second light emission layer contg. a second host and a second dopant, and each of the first and second hosts has an emission wavelength region which is shorter than the blue light wavelength region. Preferably, the first org. electroluminescent element comprises a first light emission layer contg. a first host and a first dopant, a first hole transporting layer contg. a first compd., which is provided adjacent to one side of the first light emission layer, and a first electron transporting layer contg. a second compd., which is provided adjacent to another side of the first light emission layer, and the second org. electroluminescent element comprises a second light emission layer contg. a second host and a second dopant, a second hole transporting layer contg. a third compd., which is provided adjacent to one side of the second light emission layer, and a second electron transporting layer contg. a fourth compd., which is provided adjacent to another side of the second light emission layer, and the max. emission wavelength of the first and second hosts is ≤ 415 nm, the max. emission wavelength of the first compd. and the max. emission wavelength of the third compd. are ≤ 415 nm and are the same, and the max. emission wavelength of the second compd. and the max. emission wavelength of the fourth compd. are ≤ 415 nm and are the same. Methods for fabricating the elements are described which entail simultaneously forming the hole transporting layer of each of the org. electroluminescent elements, sep. forming the light emission layer of each of the org. electroluminescent elements, and simultaneously forming the electron transporting layer or the hole blocking layer of each of the org. electroluminescent elements. Use of the elements in displays and as light sources for copiers and printers is indicated.

IT 58328-31-7 405173-85-5

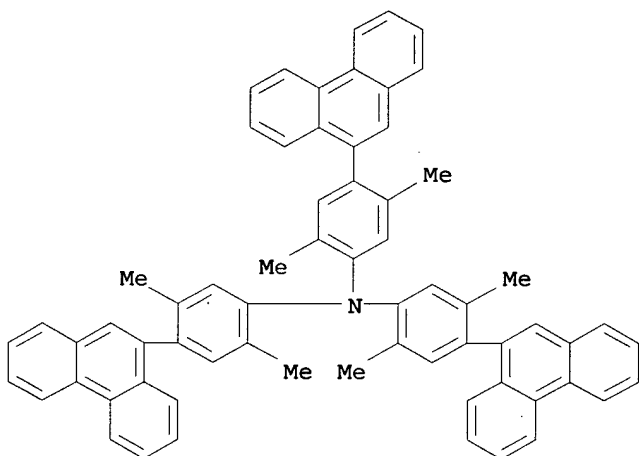
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (multicolor multielement light-emitting devices and their fabrication)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 405173-85-5 HCAPLUS
 CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



IC ICM H01L027-00
 ICS H01L051-30
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74, 76
 IT 1450-63-1, TPB 2085-33-8, Tris(8-hydroxyquinolinato)aluminum
 4733-39-5, Bathocuproine 51325-95-2, DCM II 58328-31-7
 65181-79-5 94928-86-6 123847-85-8, α -NPD 124729-98-2,
 MTDATA 142289-08-5, DPVBi 144810-07-1 148896-39-3
 343978-79-0 376367-93-0 405171-87-1 405173-85-5
 RL: DEV (Device component use); PEP (Physical, engineering or
 chemical process); PROC (Process); USES (Uses)
 (multicolor multielement light-emitting devices and their
 fabrication)

L33 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:118288 HCAPLUS
 DOCUMENT NUMBER: 138:178009
 TITLE: Organic light emitting diode devices using
 thermostable hole-injection and hole-transport
 compounds
 INVENTOR(S): Shi, Xiaobo; Sokolik, Igor
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 33 pp.
 CODEN: USXXCO

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| US 2003030059 | A1 | 20030213 | US 2001-894502 | 20010628 |
| PRIORITY APPLN. INFO.: | | | US 2001-894502 | 20010628 |

AB Multilayered org. light-emitting devices are described which are provided with hole-injection and/or hole-transport layers comprising aryl amine compds. (e.g., thermostable aryl amine compds.). The devices allow for a staircase change in the energy difference of holes and electrons as they migrate from the electrodes toward the emitter layer, resulting in a lower operating voltage and a high quantum yield of luminescence for a given c.d. Microdisplay devices employing the multilayered org. light emitting diode devices are also described.

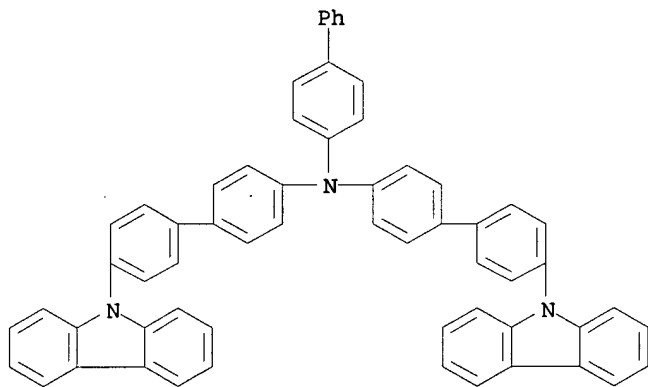
IT 384819-18-5P 482656-13-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(org. light-emitting devices using thermostable aryl amines for hole-injection and hole-transport layers)

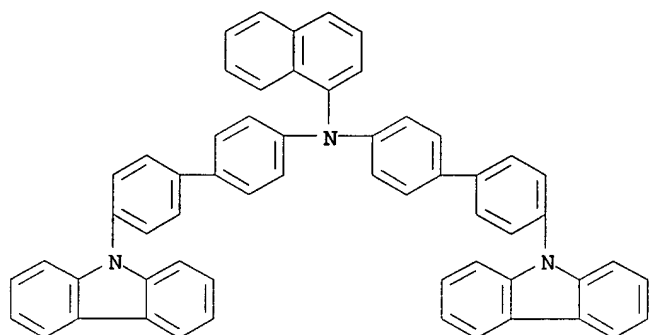
RN 384819-18-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-(9H-carbazol-9-yl)-N-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



RN 482656-13-3 HCAPLUS

CN 1-Naphthalenamine, N,N-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

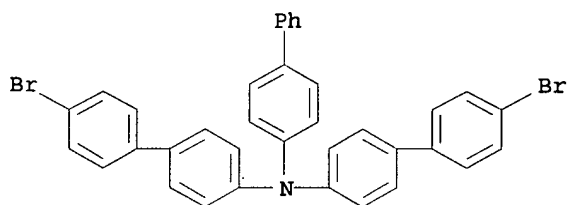


IT 384819-19-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)
 (org. light-emitting devices using thermostable aryl amines for
 hole-injection and hole-transport layers)

RN 384819-19-6 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-bromo-N-(4'-
 bromo[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H01L027-15

INCL 257079000; 257103000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)

Section cross-reference(s): 74, 76

IT 384819-18-5P 482656-12-2P 482656-13-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)

(org. light-emitting devices using thermostable aryl amines for
 hole-injection and hole-transport layers)

IT 384819-19-6P 482656-11-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)

(org. light-emitting devices using thermostable aryl amines for
 hole-injection and hole-transport layers)

L33 ANSWER 18 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:23173 HCAPLUS

DOCUMENT NUMBER: 138:98006

TITLE: Organic light emitting diode devices using
 thermostable hole-injection and hole-transport
 compounds

INVENTOR(S): Shi, Xiaobo

PATENT ASSIGNEE(S): Emagin Corporation, USA

SOURCE: PCT Int. Appl., 76 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|-------------------|
| ----- | --- | ----- | ----- | |
| WO 2003003482 | A1 | 20030109 | WO 2001-US20583 | 200106 28 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1451881 | A1 | 20040901 | EP 2001-950594 | 200106 28 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| PRIORITY APPLN. INFO.: | | | WO 2001-US20583 | W 200106 28 |

OTHER SOURCE(S): MARPAT 138:98006

AB Multilayered org. light-emitting devices are described which are provided with hole-injection and/or hole-transport layers comprising aryl amine compds. (e.g., thermostable aryl amine compds.). The devices allow for a staircase change in the energy difference of holes and electrons as they migrate from the electrodes toward the emitter layer, resulting in a lower operating voltage and a high quantum yield of luminescence for a given c.d. Microdisplay devices employing the multilayered org. light emitting diode devices are also described.

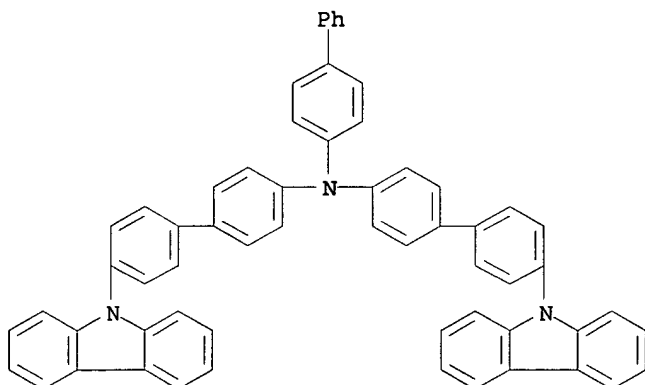
IT 384819-18-5P 482656-13-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(org. light-emitting devices using thermostable aryl amines for hole-injection and hole-transport layers)

RN 384819-18-5 HCAPLUS

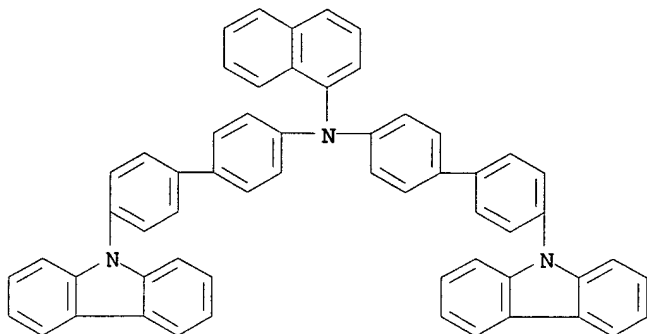
CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-(9H-carbazol-9-yl)-N-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



RN 482656-13-3 HCAPLUS

CN 1-Naphthalenamine, N,N-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-

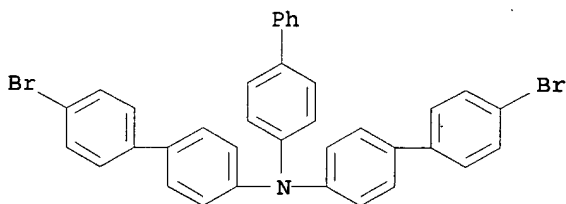
yl]- (9CI) (CA INDEX NAME)



IT 384819-19-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)(org. light-emitting devices using thermostable aryl amines for
hole-injection and hole-transport layers)

RN 384819-19-6 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-bromo-N-(4'-
bromo[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

IC ICM H01L051-30

ICS C07C211-55; C07D209-86

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

Section cross-reference(s): 74, 76

IT 384819-18-5P 482656-12-2P 482656-13-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)(org. light-emitting devices using thermostable aryl amines for
hole-injection and hole-transport layers)

IT 384819-19-6P 482656-11-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)(org. light-emitting devices using thermostable aryl amines for
hole-injection and hole-transport layers)REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L33 ANSWER 19 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:538438 HCAPLUS

DOCUMENT NUMBER: 137:101420

TITLE: Electron beam- or X-ray-sensitive chemically
amplified negative photoresist compositions with
high sensitivity and resolutionINVENTOR(S): Takahashi, Omote; Shirakawa, Hiroshi; Adegawa,
Yutaka

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

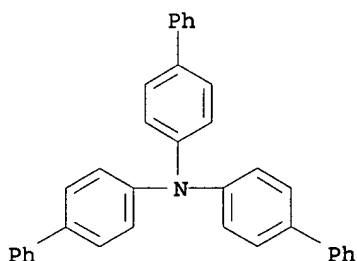
SOURCE: Jpn. Kokai Tokkyo Koho, 51 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2002202601 | A2 | 20020719 | JP 2000-401983 | 200012 28 |
| PRIORITY APPLN. INFO.: | | | | 200012 28 |

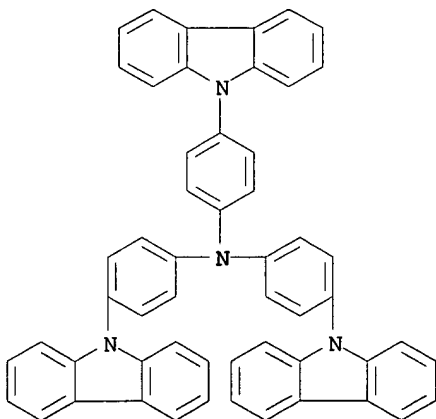
AB The photoresist compns. comprise (A) photoacid generators, (B) water-insol. and alkali-sol. resins, (C) crosslinkers for curing the resins in the presence of acids, and (D) compds. for increasing hole mobility of the compns.

IT 6543-20-0 139092-78-7 145693-79-4
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (hole mobility modifier; electron-beam or X-ray chem. amplified neg. photoresists with high sensitivity and resolu. contg. hole mobility modifiers)

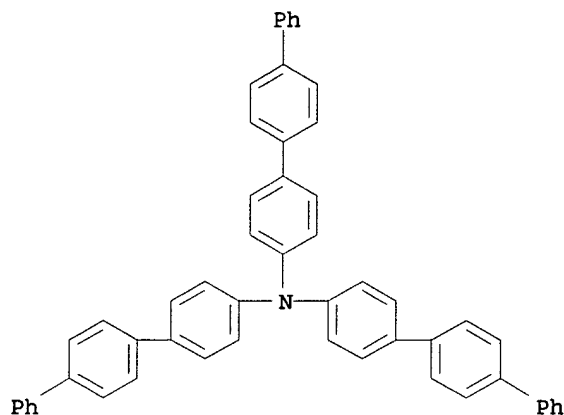
RN 6543-20-0 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, N,N-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 139092-78-7 HCAPLUS
 CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 145693-79-4 HCAPLUS
 CC [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM G03F007-038
 ICS C08K005-00; C08L101-00; G03F007-004; H01L021-027
 CC 74-5 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 IT 81-88-9 86-28-2 517-51-1 603-34-9 4197-25-5
 6543-20-0 7385-67-3 7520-01-6 15866-36-1 38215-36-0
 51325-91-8 68842-66-0 81734-52-3 82532-74-9 83054-80-2
 84699-37-6 91175-19-8 105389-36-4 118418-01-2 135804-06-7
 139092-78-7 139417-53-1 **145693-79-4**
 153556-84-4 442652-50-8
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (hole mobility modifier; electron-beam or X-ray chem. amplified
 neg. photoresists with high sensitivity and resolu. contg. hole
 mobility modifiers)

L33 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:10858 HCAPLUS

DOCUMENT NUMBER: 136:77045

TITLE: Organic light emitting diode devices using
 aromatic amine compounds with high and tunable
 glass transition temperatures

INVENTOR(S): Shi, Xiaobo; Sokolik, Igor

PATENT ASSIGNEE(S): Emagin Corporation, USA

SOURCE: PCT Int. Appl., 180 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|-----------------|----------|
| WO 2002001653 | A2 | 20020103 | WO 2001-US20584 | 20010628 |
| WO 2002001653 | A3 | 20030103 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, | | | |

NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
 TZ, UA, UG, UZ, VN, YU, ZA, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD,
 TG

US 2002057050

A1

20020516

US 2001-894744

200106

28

PRIORITY APPLN. INFO.:

US 2000-214796P

P

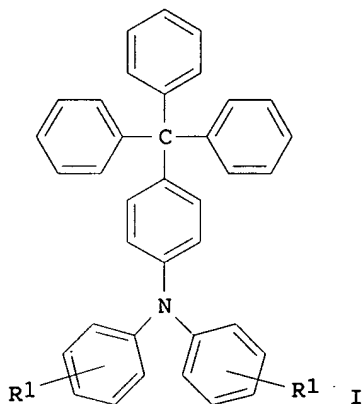
200006

28

OTHER SOURCE(S):

MARPAT 136:77045

GI



AB Hole-injection or hole-transport compds. are described by the general formula I (R1 = independently selected hydrogen, C1-6 (un)branched alkyl, alkoxy, -CN, -Cl, -Br, -CF3, thio, silyl, (un)substituted vinyl, and (un)substituted aryl groups). The structures of various substituents attached to the nitrogen group allow the adjustment of the glass transition temps. and ionization potentials of the compds. Org. light-emitting devices and microdisplay devices comprising the compds. in the hole-injection/hole-transport layers are also described.

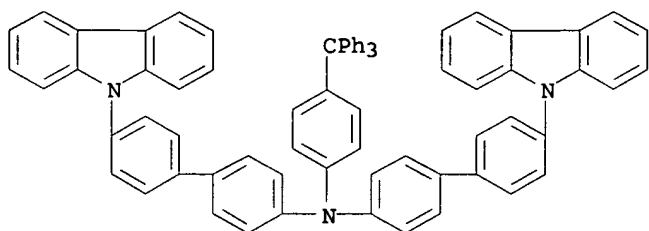
IT 384819-17-4P 384819-18-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(arom. amine hole-injection or hole-transport compds. with high and tunable glass transition temps. and org. light-emitting diodes and microdisplay devices using them)

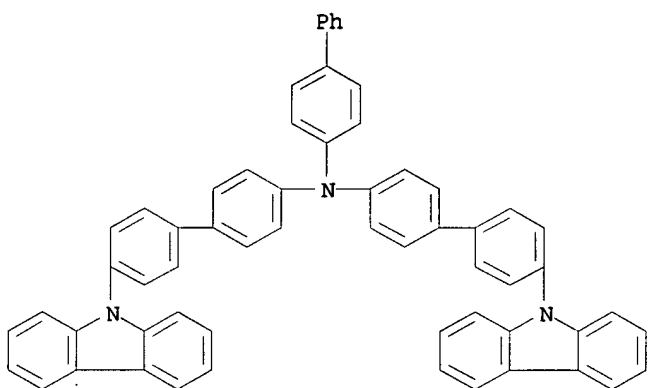
RN 384819-17-4 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-N-[4-(triphenylmethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 384819-18-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-(9H-carbazol-9-yl)-N-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



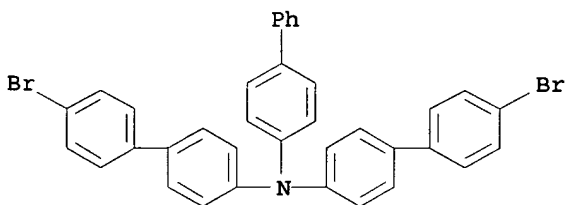
IT 384819-19-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(arom. amine hole-injection or hole-transport compds. with high and tunable glass transition temps. and org. light-emitting diodes and microdisplay devices using them)

RN 384819-19-6 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-4'-bromo-N-(4'-bromo[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H01L051-30

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 92-67-1P, 4-Aminobiphenyl 384819-16-3P 384819-17-4P

384819-18-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(arom. amine hole-injection or hole-transport compds. with high and tunable glass transition temps. and org. light-emitting

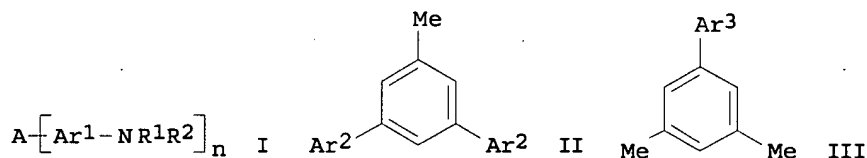
diodes and microdisplay devices using them)

IT 384819-15-2P 384819-19-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)
 (arom. amine hole-injection or hole-transport compds. with high
 and tunable glass transition temps. and org. light-emitting
 diodes and microdisplay devices using them)

L33 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:631876 HCAPLUS
 DOCUMENT NUMBER: 133:230365
 TITLE: Aromatic amino compounds, their preparation, and
 uses in electroluminescent element or
 electrophotographic photoreceptor
 INVENTOR(S): Fujino, Yasumitsu; Ueda, Hideaki; Furukawa,
 Keiichi
 PATENT ASSIGNEE(S): Minolta Camera Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-------------------|----------|
| JP 2000247932 | A2 | 20000912 | JP 1999-52513 | 19990301 |
| PRIORITY APPLN. INFO.: | | | JP 1999-52513 | 19990301 |
| OTHER SOURCE(S): | | | MARPAT 133:230365 | |

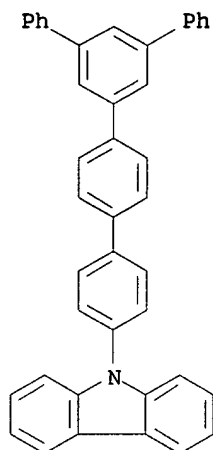
GI



AB The amino compds. A(Ar¹NR¹R²)_n [I; A = Q¹, Q²; Ar², Ar³ = (substituted) aryl; Ar¹ = (substituted) arylene; R¹, R² = alkyl, aralkyl, (substituted) aryl, (substituted) arom. heterocyclyl; n = 1, 2] are prepd. by reaction of A(Ar¹X)_n (A, Ar¹, n = same as I; X = halo) with HNR¹R² (R¹, R² = same as I). I show high charge-transporting ability, luminescence, and durability.

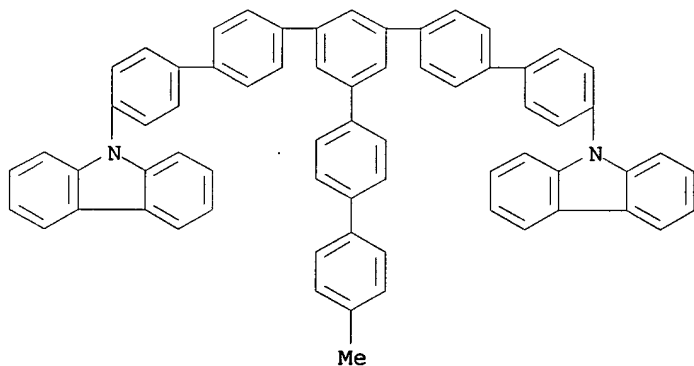
IT 292148-73-3 292148-82-4 292148-85-7
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (prepn. of arom. amino compds. for electroluminescent element or electrophotog. photoreceptor)

RN 292148-73-3 HCAPLUS
 CN 9H-Carbazole, 9-(5'-phenyl[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl)- (9CI) (CA INDEX NAME)



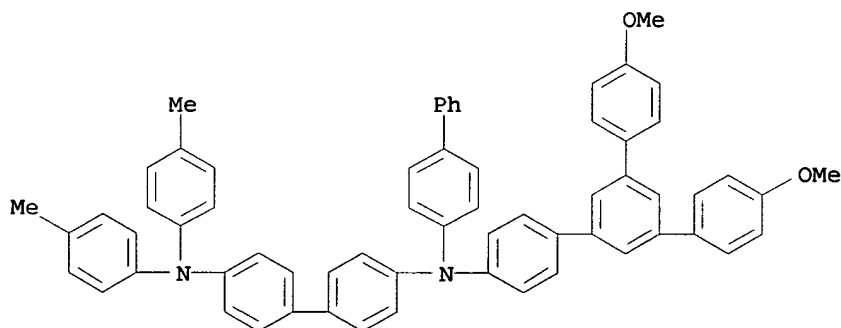
RN 292148-82-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[5''-(4'-methyl[1,1'-biphenyl]-4-yl)] [1,1':4',1'':3'',1'':4''',1''':-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)



RN 292148-85-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-[1,1'-biphenyl]-4-yl-N-[4''-methoxy-5'-(4-methoxyphenyl) [1,1':3',1'':-terphenyl]-4-yl]-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C211-58; C07D209-86; C07D271-10; C07D279-22; C07D471-06;

C09K011-06; G03G005-06; H05B033-14; H05B033-22

CC 74-3 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 25, 73

IT 212577-33-8 292148-69-7 292148-70-0 292148-71-1 292148-72-2
292148-73-3 292148-75-5 292148-76-6 292148-77-7
292148-78-8 292148-79-9 292148-80-2 292148-81-3
292148-82-4 292148-83-5 292148-84-6 292148-85-7
292148-86-8 292148-87-9 292148-88-0 292148-89-1 292148-90-4
292148-91-5 292148-92-6 292148-95-9
RL: DEV (Device component use); PRP (Properties); TEM (Technical or
engineered material use); USES (Uses)
(prepn. of arom. amino compds. for electroluminescent element or
electrophotog. photoreceptor)

L33 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:137260 HCAPLUS

DOCUMENT NUMBER: 132:180365

TITLE: Preparation of tris(aminobiphenylylamino)
compounds, their use as hole transporting
agents, and their applications

INVENTOR(S): Ueda, Hideaki; Fujino, Yasumitsu; Furukawa,
Keiichi

PATENT ASSIGNEE(S): Minolta Camera Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 62 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2000063335 | A2 | 20000229 | JP 1998-230672 | 199808 17 |
| PRIORITY APPLN. INFO.: | | | JP 1998-230672 | 199808 17 |

OTHER SOURCE(S): CASREACT 132:180365; MARPAT 132:180365

GI

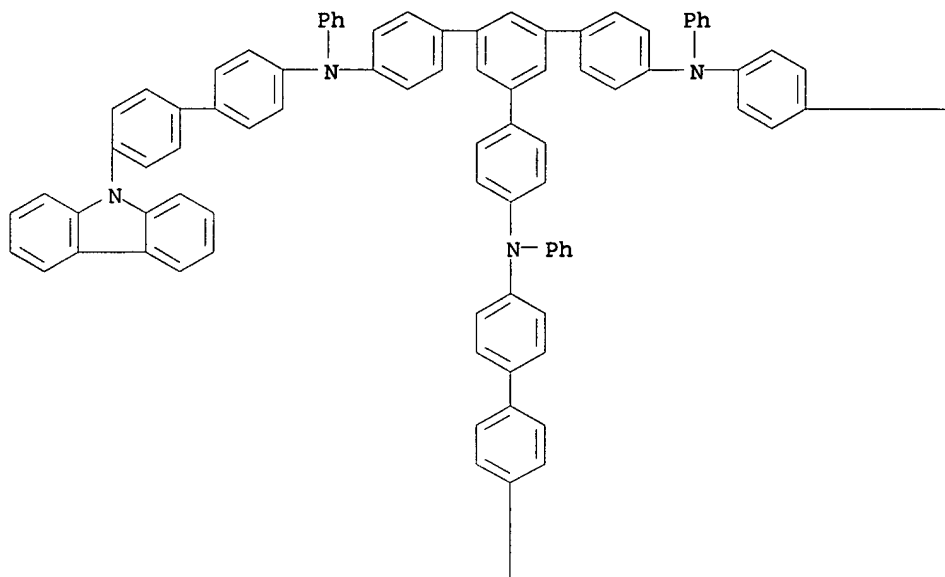
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The title compds. I [A = trivalent org. group selected from 7 groups
including 1,3,5-benzenetriyl, Q, Q1, Q2, etc.; Ar1 = (un)substituted
aryl, heterocyclyl; R1, R2 = (un)substituted aralkyl, aryl,
heterocyclyl or NR1R2 may be a cyclyl; R3 = H, alkyl] and 4
processes for the prepn. of I are claimed. Also claimed are
hole-transporting agents comprising I, and org. electroluminescent
devices and electrophotog. photoreceptors contg. I. A mixt. of
1,3,5-C6H3(NHC6H4Me-4)3, 4-IC6H4C6H4NPh(C6H4Me-3)-4, K2CO3, Cu,
18-crown-6-ether, and o-C6H4Cl2 was refluxed for 24 h to give 41.4%
I (A = 1,3,5-benzenetriyl, Ar1 = C6H4Me-4, R1 = Ph, R2 = C6H4Me-3,
R3 = H) (II). A function-sepd. electrophotog. photoreceptor contg.
II in the charge-transporting layer was also fabricated.

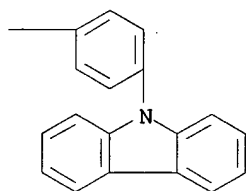
IT 259541-58-7 259541-61-2 259541-96-3
RL: DEV (Device component use); USES (Uses)
(prepn. of tris(aminobiphenylylamino) compds. as hole
transporting agents for electroluminescent devices and
electrophotog. photoreceptors)

RN 259541-58-7 HCAPLUS
 CN [1,1':3',1''-Terphenyl]-4,4''-diamine, N,N'-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-5'-[4-[[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

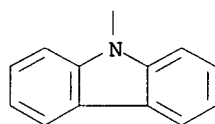
PAGE 1-A



PAGE 1-B

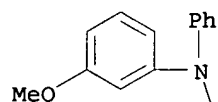
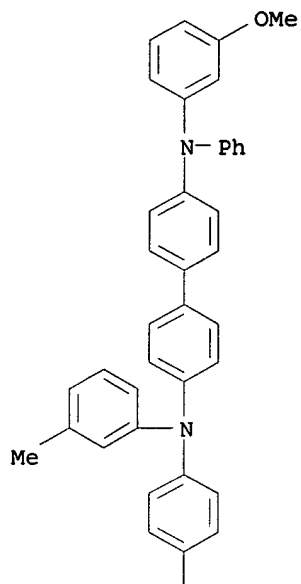


PAGE 2-A

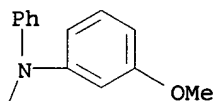


RN 259541-61-2 HCAPLUS
 CN [1,1'-Biphenyl]-4,4''-diamine, N-[4'-[(3-methoxyphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N',N'-bis[4'-[[4'-[(3-methoxyphenyl)phenylamino][1,1'-biphenyl]-4-yl](3-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)

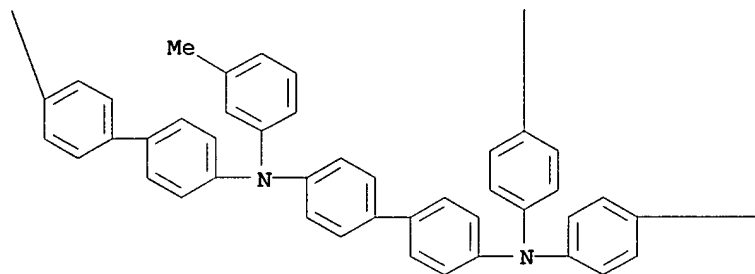
PAGE 1-A



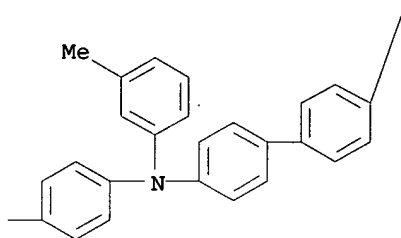
PAGE 1-B



PAGE 2-A

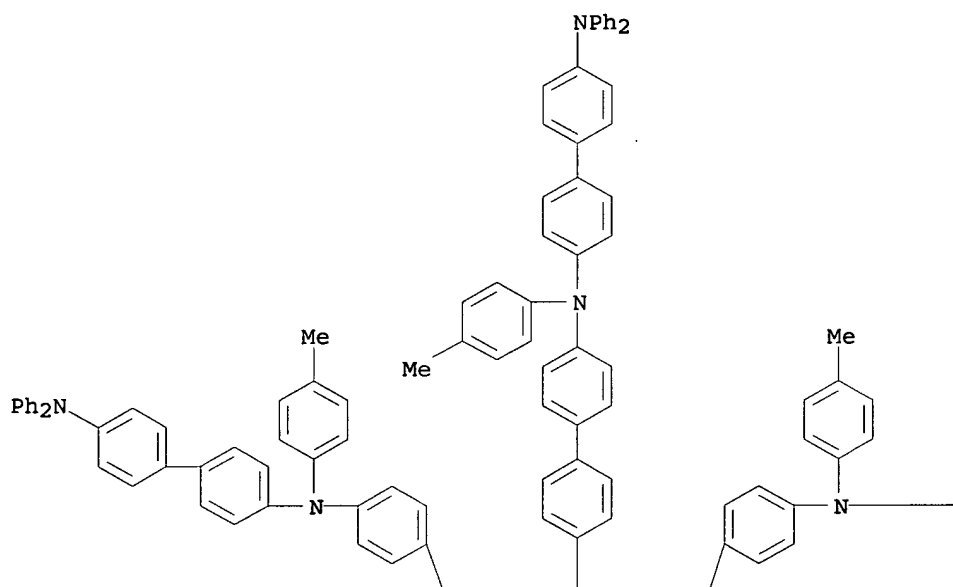


PAGE 2-B

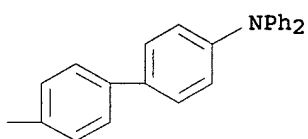


RN 259541-96-3 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N-[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N',N'-bis[4'-[[4'-(diphenylamino)[1,1'-biphenyl]-4-yl](4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N-(4-methylphenyl)- (9CI)
 (CA INDEX NAME)

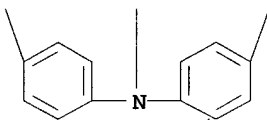
PAGE 1-A



PAGE 1-B



PAGE 2-A



IT 259541-46-3P

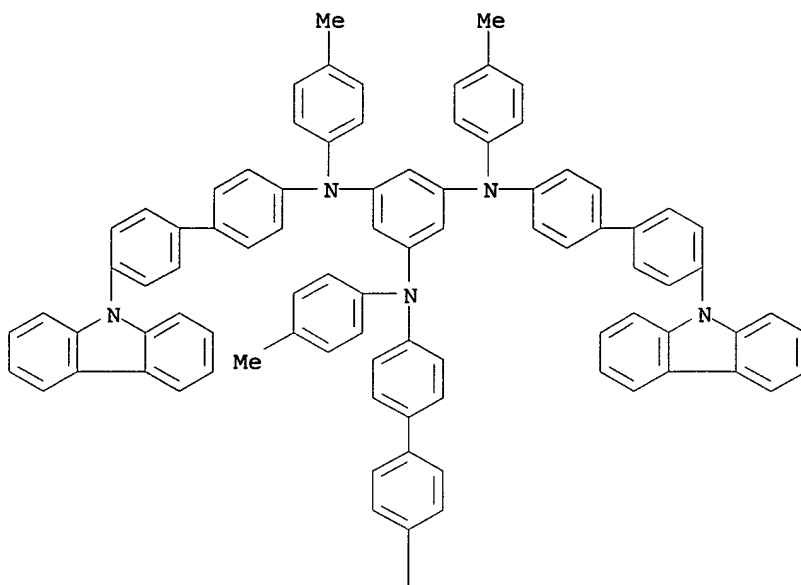
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(prepn. of tris(aminobiphenylamino) compds. as hole transporting agents for electroluminescent devices and electrophotog. photoreceptors)

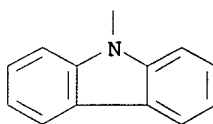
RN 259541-46-3 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-N,N',N''-tris(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

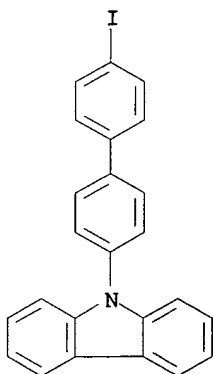


IT 207447-27-6

RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of tris(aminobiphenylamino) compds. as hole
 transporting agents for electroluminescent devices and
 electrophotog. photoreceptors)

RN 207447-27-6 HCAPLUS

CN 9H-Carbazole, 9-(4'-iodo[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX
 NAME)



IC ICM C07C211-54

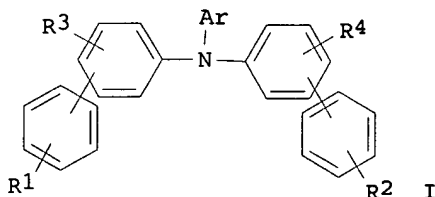
ICS C07C209-02; C07D209-80; C09K011-06; G03G005-06; H05B033-22
 CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 Section cross-reference(s): 74
 IT 259541-39-4 259541-40-7 259541-42-9 259541-43-0 259541-45-2
 259541-48-5 259541-49-6 259541-50-9 259541-51-0 259541-52-1
 259541-53-2 259541-54-3 259541-55-4 259541-56-5 259541-57-6
 259541-58-7 259541-59-8 259541-60-1 259541-61-2
 259541-62-3 259541-63-4 259541-64-5 259541-65-6
 259541-96-3
 RL: DEV (Device component use); USES (Uses)
 (prepn. of tris(aminobiphenylamino) compds. as hole
 transporting agents for electroluminescent devices and
 electrophotog. photoreceptors)
 IT 259541-41-8P 259541-46-3P 259541-47-4P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (prepn. of tris(aminobiphenylamino) compds. as hole
 transporting agents for electroluminescent devices and
 electrophotog. photoreceptors)
 IT 104216-55-9, 1,3,5-Tris[(4-methylphenyl)amino]benzene 195443-34-6,
 N-(4-(4-Iodophenyl)phenyl)-N-phenyl-N-(3-methylphenyl)amine
 207447-27-6 216384-36-0
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of tris(aminobiphenylamino) compds. as hole
 transporting agents for electroluminescent devices and
 electrophotog. photoreceptors)

L33 ANSWER 23 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:157136 HCAPLUS
 DOCUMENT NUMBER: 130:244425
 TITLE: Electrophotographic photoreceptor using specific
 two types of charge-transporting materials
 INVENTOR(S): Kurimoto, Eiji; Umeda, Minoru; Ikegami, Takaaki;
 Sakon, Yota
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 384 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 11065140 | A2 | 19990305 | JP 1997-239555 | 199708 15 |
| PRIORITY APPLN. INFO.: | | | JP 1997-239555 | 199708 15 |

GI



AB The title photoreceptor comprises a conductive support coated with a photosensitive layer contg. a compd. I [R1, R2 = H, amino, (substituted) dialkylamino, alkoxy, thioalkoxy, aryloxy, (substituted) alkyl, halo, (substituted) aryl; R3, R4 = H, alkoxy, (substituted) alkyl, halo; Ar = (substituted) monocyclic arom. hydrocarbon, (substituted) non-condensed polycyclic arom. hydrocarbon, (substituted) heterocycle] and a compd. [A(CH:CH)nCR:CH]2(CH2)m [II; A = 9-anthryl, (substituted) N-substituted carbazolyl, N-substituted phenothiazinyl, ArNR1R2 {Ar = (substituted) arylene; R1, R2 = (substituted) alkyl, (substituted) aralkyl, (substituted) aryl}; R = H, (substituted) alkyl, (substituted) aralkyl, (substituted) aryl; m = 2-8; n = 0 or 1]. 22 Types of compds. may be used instead of I and II. The photoreceptor shows high photosensitivity, stable charging properties, and improved durability in repeated use.

IT 132679-49-3 138689-62-0 138823-70-8

143764-40-3 143764-41-4 146966-94-1

205262-43-7 221307-66-0 221307-70-6

221307-72-8 221307-75-1 221307-83-1

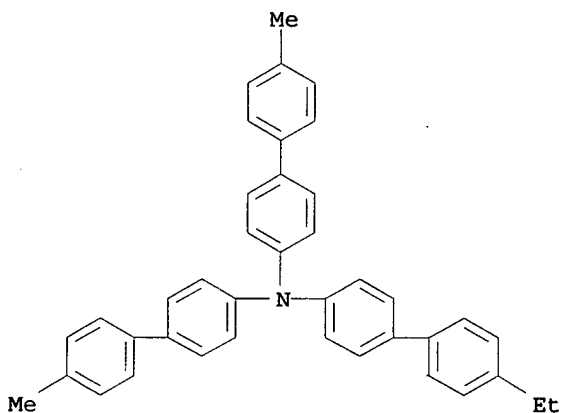
221308-17-4 221308-23-2 221308-77-6

RL: DEV (Device component use); USES (Uses)

(electrophotog. photoreceptor contg. two-types of charge-transporting agents)

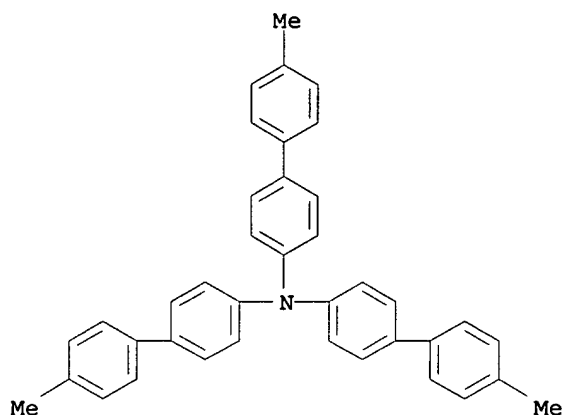
RN 132679-49-3 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-(4'-ethyl[1,1'-biphenyl]-4-yl)-4'-methyl-N-(4'-ethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



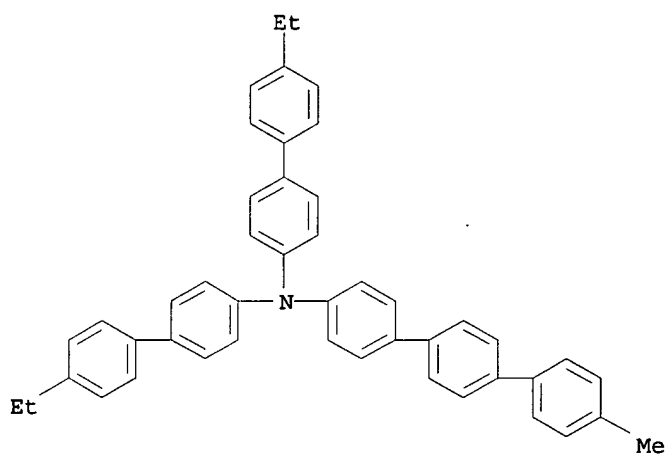
RN 138689-62-0 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-methyl-N,N-bis(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



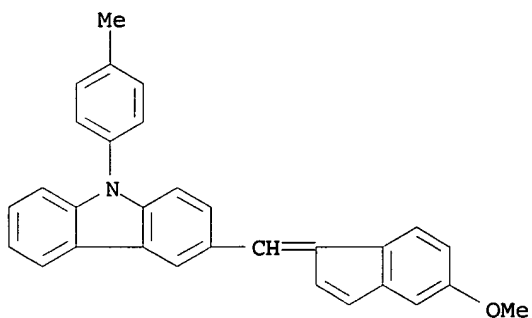
RN 138823-70-8 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis(4'-ethyl[1,1'-biphenyl]-4-yl)-4''-methyl- (9CI) (CA INDEX NAME)



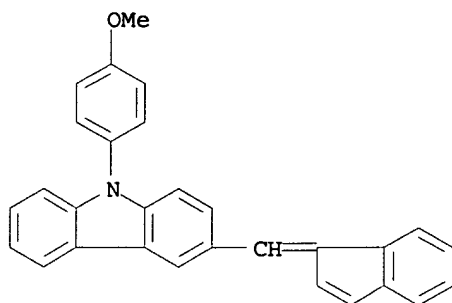
RN 143764-40-3 HCAPLUS

CN 9H-Carbazole, 3-[(5-methoxy-1H-inden-1-ylidene)methyl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)

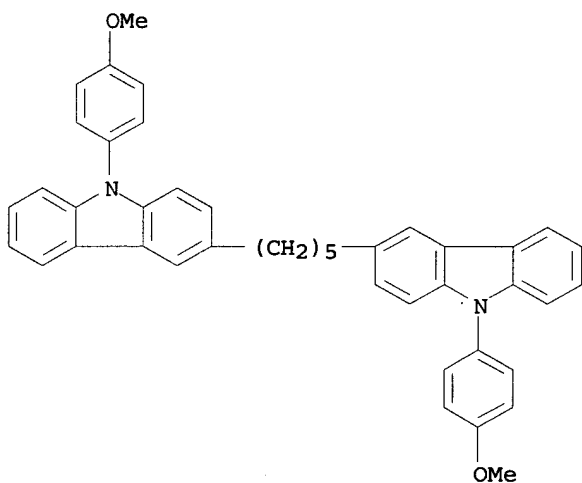


RN 143764-41-4 HCAPLUS

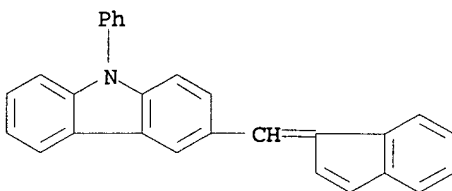
CN 9H-Carbazole, 3-(1H-inden-1-ylidenemethyl)-9-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



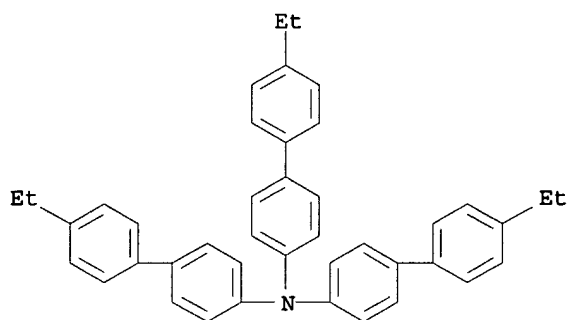
RN 146966-94-1 HCAPLUS
 CN 9H-Carbazole, 3,3'-(1,5-pentanediy1)bis[9-(4-methoxyphenyl)- (9CI)
 (CA INDEX NAME)



RN 205262-43-7 HCAPLUS
 CN 9H-Carbazole, 3-(1H-inden-1-ylidenemethyl)-9-phenyl- (9CI) (CA
 INDEX NAME)

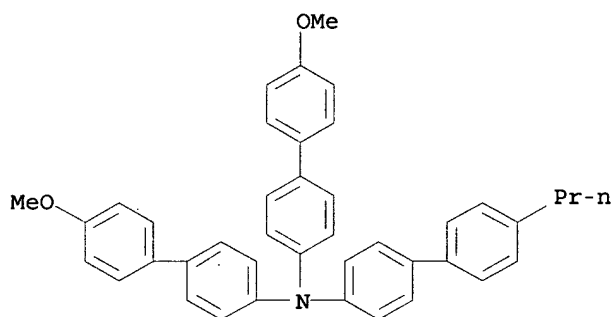


RN 221307-66-0 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-ethyl-N,N-bis(4'-ethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



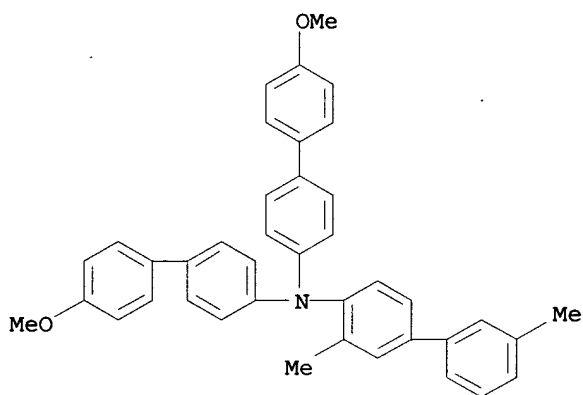
RN 221307-70-6 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N,N-bis(4'-methoxy[1,1'-biphenyl]-4-yl)-4'-propyl- (9CI) (CA INDEX NAME)



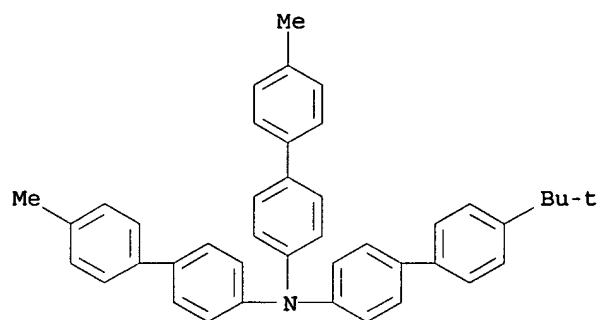
RN 221307-72-8 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N,N-bis(4'-methoxy[1,1'-biphenyl]-4-yl)-3,3'-dimethyl- (9CI) (CA INDEX NAME)

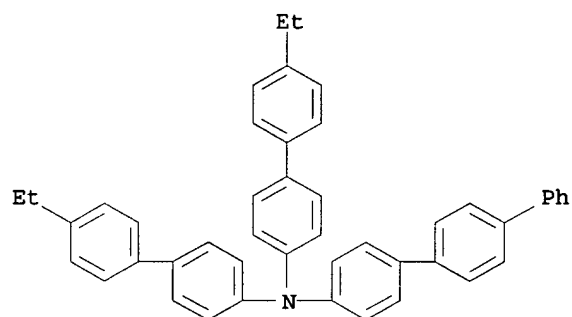


RN 221307-75-1 HCAPLUS

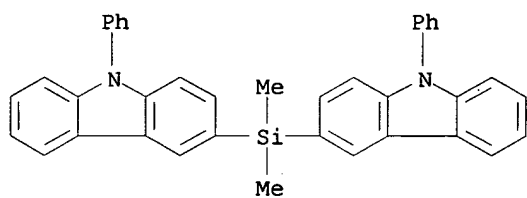
CN [1,1'-Biphenyl]-4-amine, N-[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]-4'-methyl-N-(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



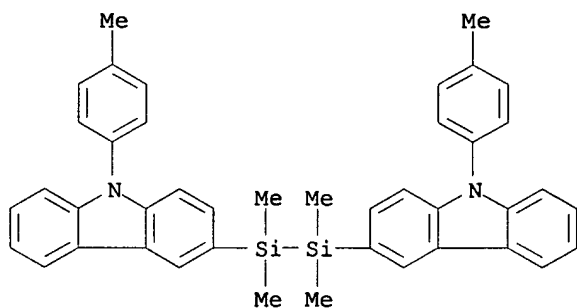
RN 221307-83-1 HCAPLUS
 CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis(4'-ethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



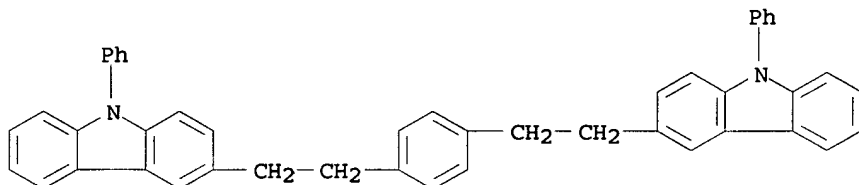
RN 221308-17-4 HCAPLUS
 CN 9H-Carbazole, 3,3'-(dimethylsilylene)bis[9-phenyl]- (9CI) (CA INDEX NAME)



RN 221308-23-2 HCAPLUS
 CN 9H-Carbazole, 3,3'-(1,1,2,2-tetramethyl-1,2-disilanediy)bis[9-(4-methylphenyl)]- (9CI) (CA INDEX NAME)



RN 221308-77-6 HCAPLUS
 CN 9H-Carbazole, 3,3'-(1,4-phenylenedi-2,1-ethanediyl)bis[9-phenyl-
 (9CI) (CA INDEX NAME)



IC ICM G03G005-06
 ICS G03G005-06
 CC 74-3 (Radiation Chemistry, Photochemistry, and
 Photographic and Other Reprographic Processes)
 IT 1679-98-7 29092-50-0 38764-40-8 47869-78-3 65419-21-8
 65419-26-3 65698-76-2 70366-85-7 70366-86-8 70366-88-0
 70366-94-8 70367-14-5 70419-51-1 70419-54-4 70419-59-9
 70419-79-3 70419-94-2 70420-02-9 72924-73-3 78014-47-8
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RL: DEV (Device component use); USES (Uses)

(electrophotog. photoreceptor contg. two-types of charge-transporting agents)

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RL: DEV (Device component use); USES (Uses)

(electrophotog. photoreceptor contg. two-types of charge-transporting agents)

L33 ANSWER 24 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:762101 HCAPLUS

DOCUMENT NUMBER: 130:73661

TITLE: Electroluminescent devices using star-burst aromatic amines, electrophotographic display parts, and manufacture of the amines

INVENTOR(S): Hu, Nan-xing; Xie, Shuang; Popovic, Zoran D.; Hor, Ah-mee; Liu, Ping

PATENT ASSIGNEE(S): Xerox Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

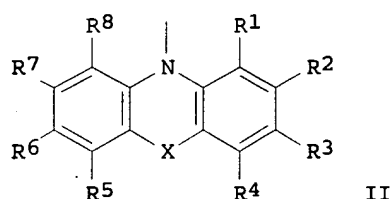
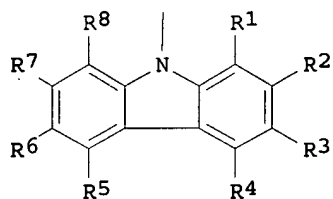
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. ----- | KIND --- | DATE ----- | APPLICATION NO. ----- | DATE |
|------------------------|-------------|------------------|--------------------------|-------------------|
| JP 10312073 | A2 | 19981124 | JP 1998-47123 | 199802 27 |
| US 5747205 | A | 19980505 | US 1997-807487 | 199702 27 |
| US 5891587 | A | 19990406 | US 1997-807510 | 199702 27 |
| PRIORITY APPLN. INFO.: | | | US 1997-807487 | A 199702 27 |
| | | | US 1997-807510 | A 199702 27 |
| OTHER SOURCE(S): | | MARPAT 130:73661 | | |
| GI | | | | |

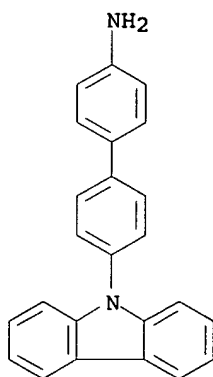


AB Electroluminescent (EL) devices are described which contain star-burst amines N(A1Ra)(A2Rb)A3Rc (A1-A3 = biaryl; Ra-Rc = NAr1Ar2, arom. condensed group I, II; Ar1, Ar2 = aryl, R1-R8 = H, halogen, hydrocarbon group, alkoxy; X = O, S, alkylene). Electrophotog. display parts using the amines are also claimed. The amines are manufd. by a process including reaction of RaA1NH2, RbA2I, and RcaA3I in the presence of Cu complex catalysts. The EL device shows enhanced heat stability, driving stability, and durability.

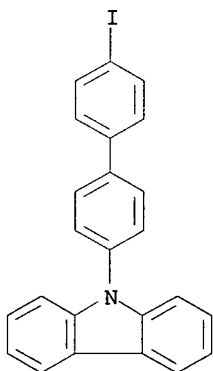
IT 207447-26-5 207447-27-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (electroluminescent device and electrophotog. display device using star-burst arom. amine from)

RN 207447-26-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)- (9CI) (CA INDEX NAME)

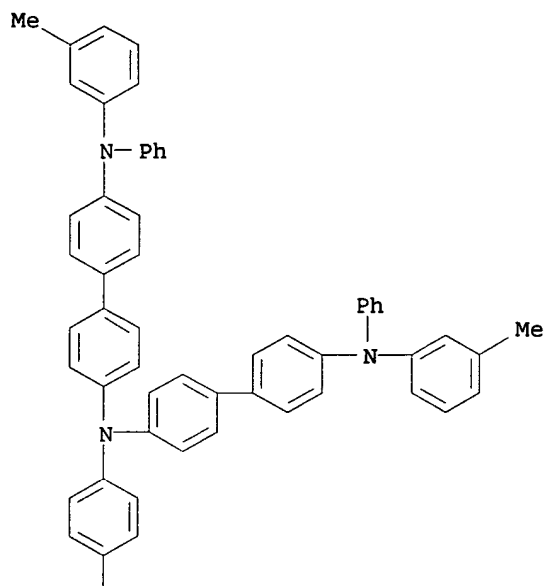


RN 207447-27-6 HCAPLUS
 CN 9H-Carbazole, 9-(4'-iodo[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

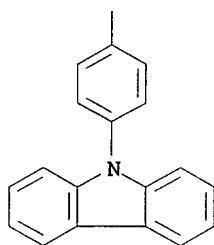


IT 207447-53-8 207447-57-2 207447-59-4
 217656-55-8
 RL: DEV (Device component use); USES (Uses)
 (electroluminescent devices and electrophotog. display devices
 using star-burst arom. amines)
 RN 207447-53-8 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N-[4'-(9H-carbazol-9-yl)[1,1'-
 biphenyl]-4-yl]-N'-(3-methylphenyl)-N-[4'-[(3-
 methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N'-phenyl- (9CI) (CA
 INDEX NAME)

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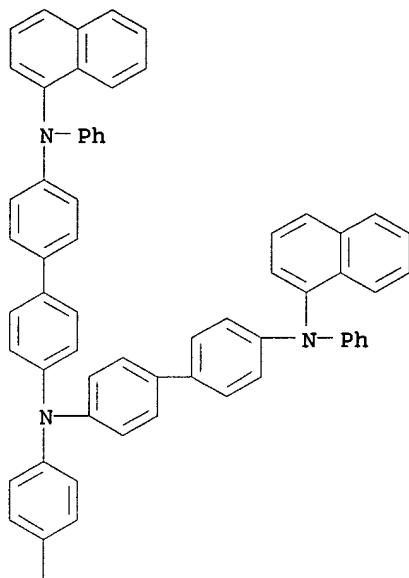


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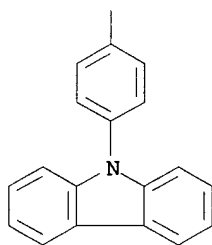


RN 207447-57-2 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N-[4'-(9H-carbazol-9-yl) [1,1'-biphenyl]-4-yl]-N'-1-naphthalenyl-N-[4'-(1-naphthalenylphenylamino) [1,1'-biphenyl]-4-yl]-N'-phenyl- (9CI) (CA INDEX NAME)

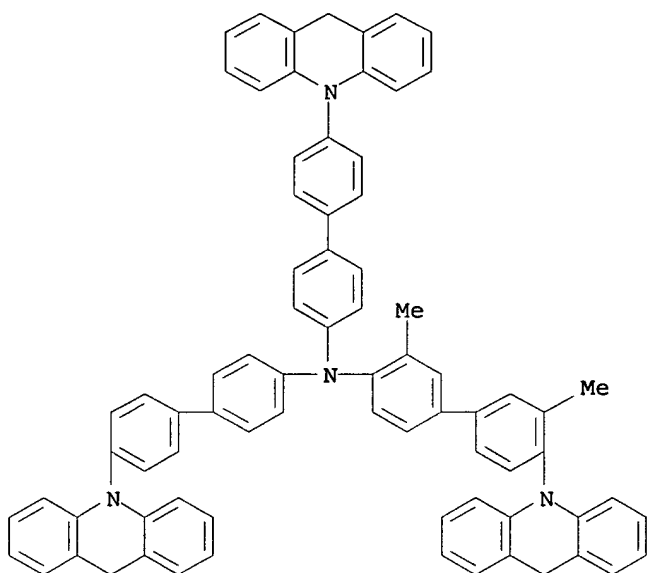
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PAGE 2-A

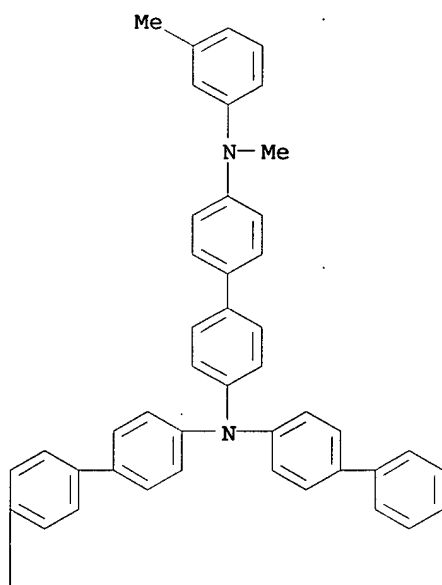


RN 207447-59-4 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(10(9H)-acridinyl)-N,N-bis[4'-(10(9H)-acridinyl)[1,1'-biphenyl]-4-yl]-3,3'-dimethyl- (9CI) (CA INDEX NAME)

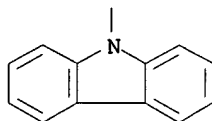
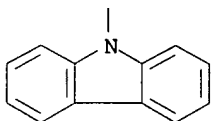


RN 217656-55-8 HCAPLUS
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-N'-methyl-N'-(3-methylphenyl)- (9CI) (CA INDEX NAME)

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IT 128396-99-6P 207447-28-7P 207447-31-2P

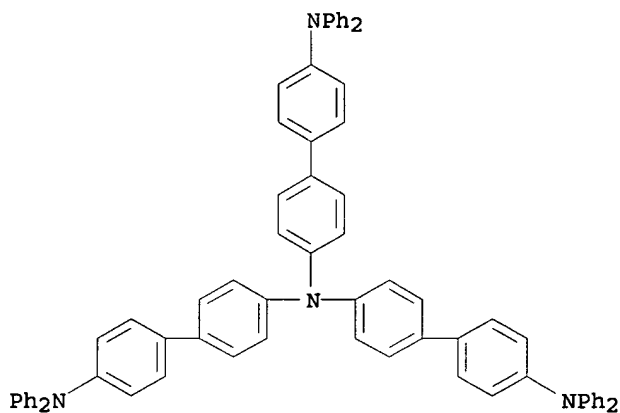
207447-34-5P 217656-14-9P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(electroluminescent devices and electrophotog. display devices using star-burst arom. amines)

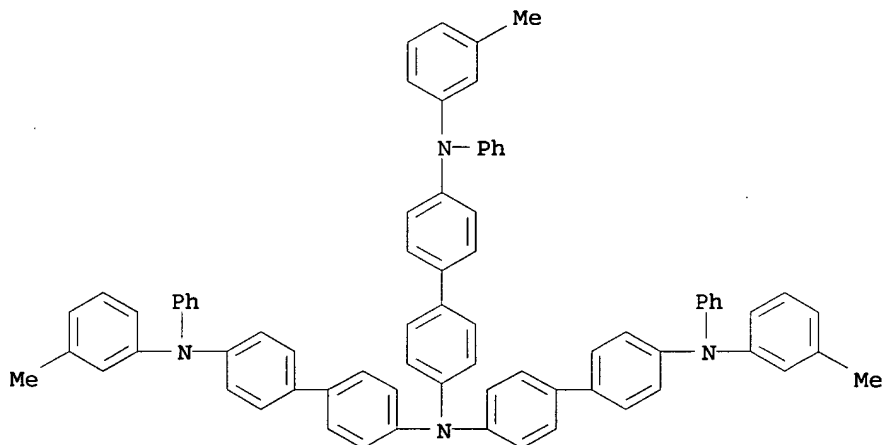
RN 128396-99-6 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



RN 207447-28-7 HCAPLUS

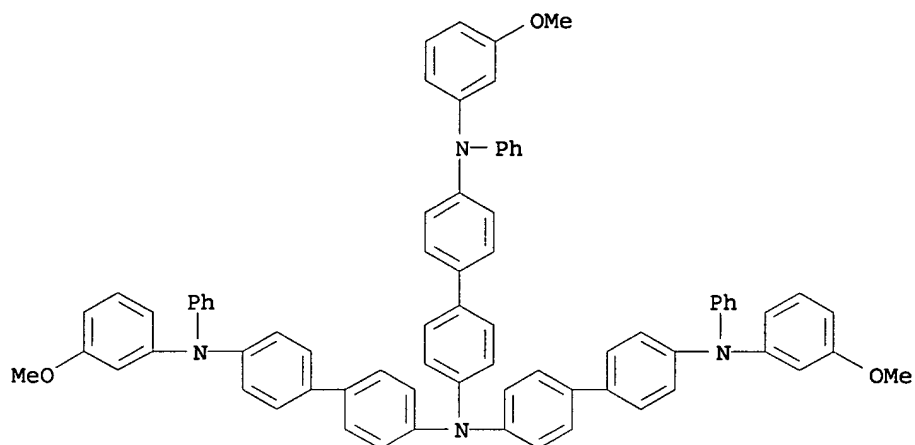
CN [1,1'-Biphenyl]-4,4'-diamine, N-(3-methylphenyl)-N',N'-bis[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 207447-31-2 HCAPLUS

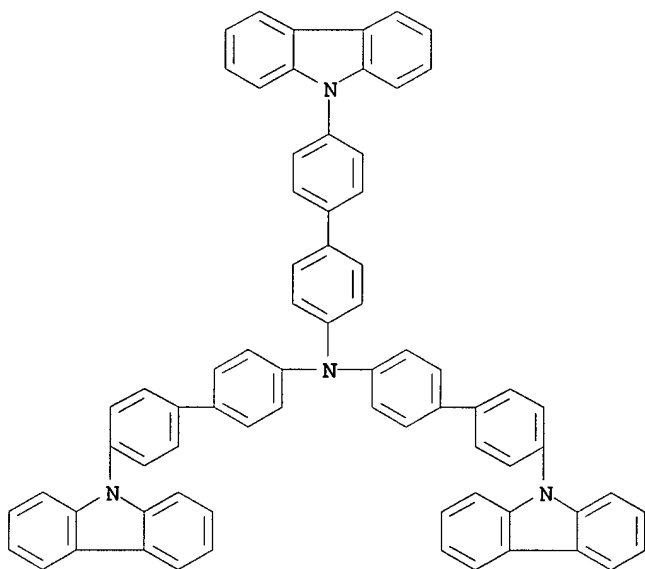
CN [1,1'-Biphenyl]-4,4'-diamine, N-(3-methoxyphenyl)-N',N'-bis[4'-[(3-methoxyphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)

methoxyphenyl)phenylamino] [1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)



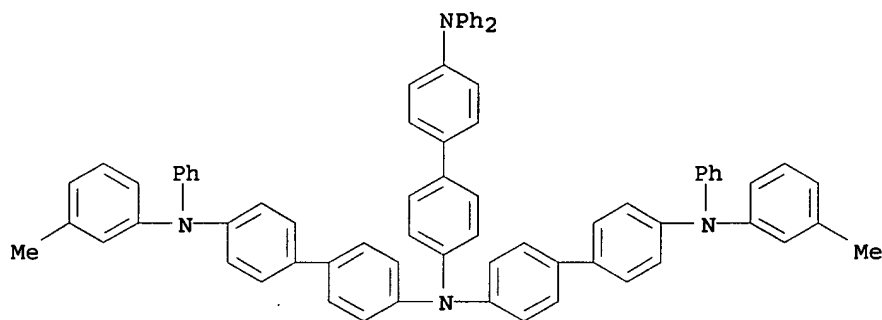
RN 207447-34-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-bis[4'-(9H-carbazol-9-yl) [1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



RN 217656-14-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[(3-methylphenyl)phenylamino] [1,1'-biphenyl]-4-yl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IT 207447-37-8 207447-41-4 207447-43-6

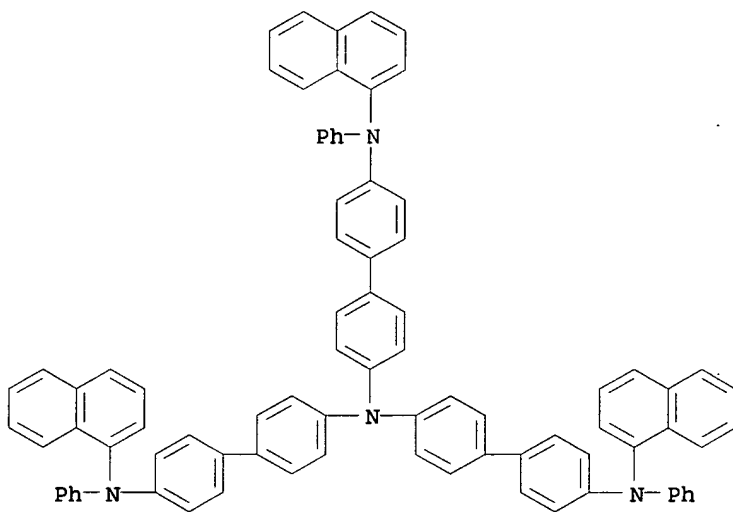
207447-46-9 207447-48-1 207447-49-2

207447-51-6 217656-25-2 217656-36-5

RL: TEM (Technical or engineered material use); USES (Uses)
(electroluminescent devices and electrophotog. display devices
using star-burst arom. amines)

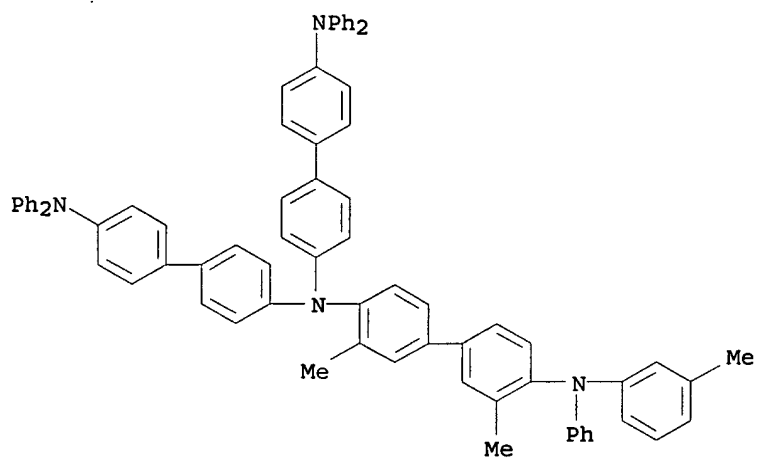
RN 207447-37-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-1-naphthalenyl-N'-[4'-(1-naphthalenylphenylamino)[1,1'-biphenyl]-4-yl]-N'-[4'-(1-naphthalenylphenylamino)[1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)

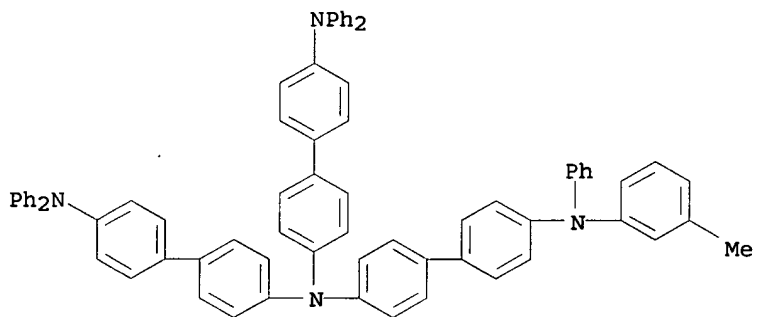


RN 207447-41-4 HCAPLUS

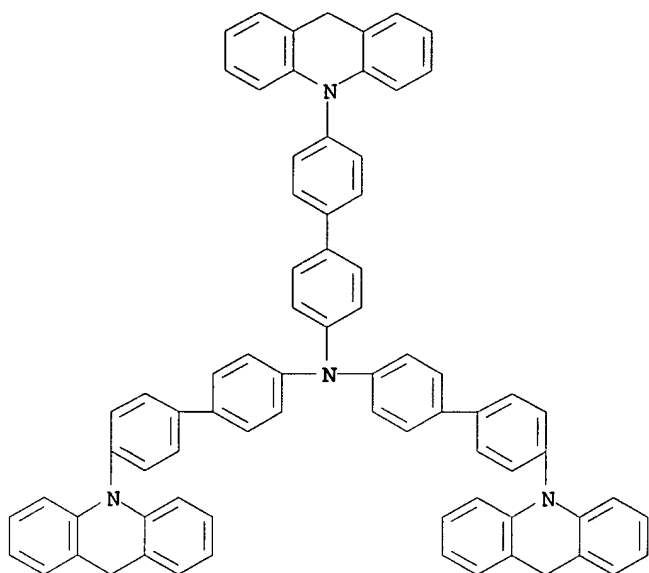
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RN 207447-43-6 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)

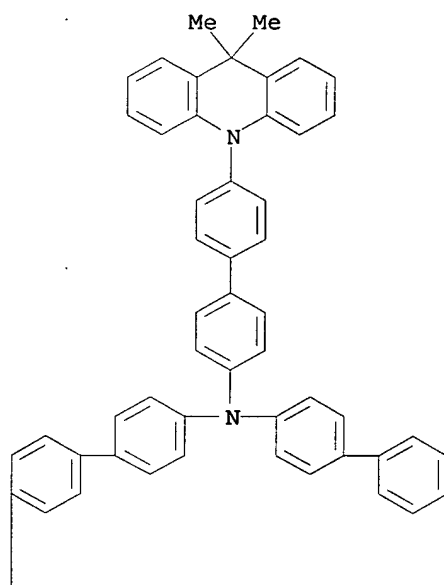


RN 207447-46-9 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(10(9H)-acridinyl)-N,N-bis[4'-(10(9H)-acridinyl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

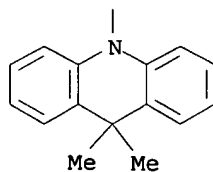
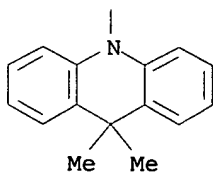


RN 207447-48-1 HCAPLUS
CN [1,1'-Biphenyl]-4-amine, 4'-(9,9-dimethyl-10(9H)-acridinyl)-N,N-bis[4'-(9,9-dimethyl-10(9H)-acridinyl)[1,1'-biphenyl]-4-yl]- (9CI)
(CA INDEX NAME)

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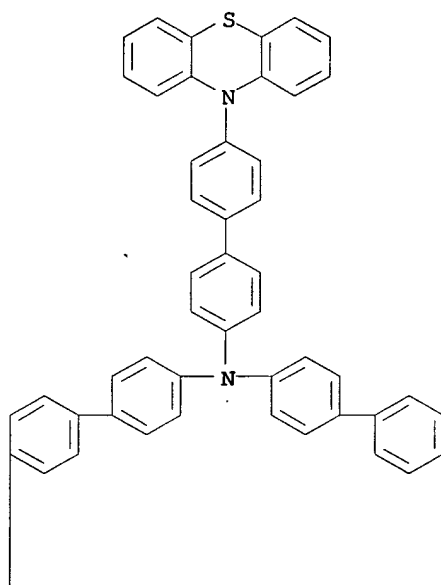


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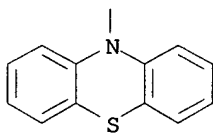
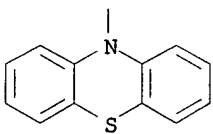


RN 207447-49-2 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(10H-phenothiazin-10-yl)-N,N-bis[4'-(10H-phenothiazin-10-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

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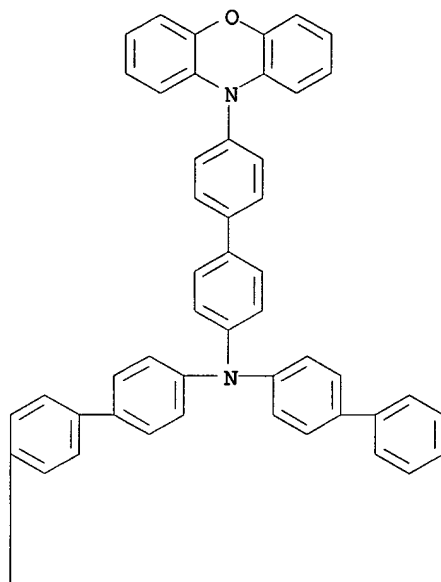


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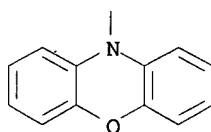
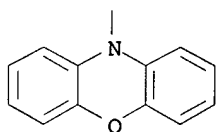


RN 207447-51-6 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(10H-phenoxazin-10-yl)-N,N-bis[4'-(10H-phenoxazin-10-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

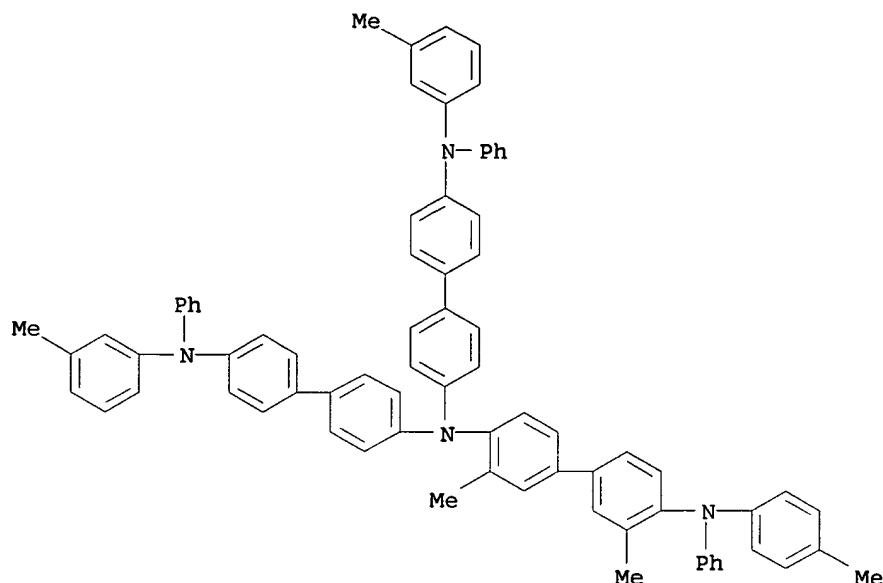
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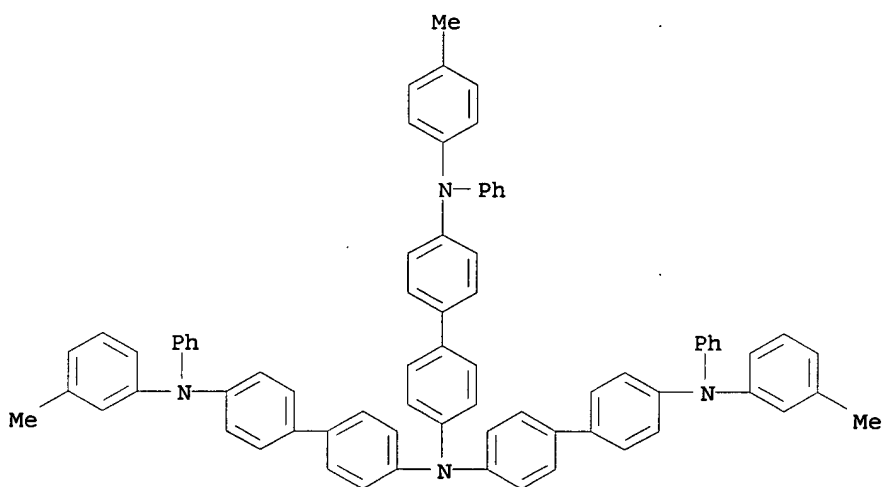


RN 217656-25-2 HCAPLUS
CN [1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-N-(4-methylphenyl)-N',N'-bis[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N-phenyl-(9CI) (CA INDEX NAME)



RN 217656-36-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(4-methylphenyl)-N',N'-bis[4'-[(3-methylphenyl)phenylamino]]-1,1'-biphenyl-4-yl-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM G03G005-06

ICS G03G005-06; B01J031-22; C07D265-38; C07D279-26; C09K011-06; H05B033-14; H05B033-22; C07D209-86

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 74

IT 84161-87-5, N,N-Diphenylbenzidine 167218-38-4 195443-34-6
207447-18-5 207447-21-0 207447-26-5 207447-27-6
217656-60-5

RL: RCT (Reactant); RACT (Reactant or reagent)
(electroluminescent device and electrophotog. display device
using star-burst arom. amine from)

IT 207447-53-8 207447-57-2 207447-59-4

217656-55-8

RL: DEV (Device component use); USES (Uses)
 (electroluminescent devices and electrophotog. display devices
 using star-burst arom. amines)

IT 128396-99-6P 207447-28-7P 207447-31-2P

207447-34-5P 217656-14-9P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (electroluminescent devices and electrophotog. display devices
 using star-burst arom. amines)

IT 207447-37-8 207447-41-4 207447-43-6

207447-46-9 207447-48-1 207447-49-2

207447-51-6 217656-25-2 217656-36-5

RL: TEM (Technical or engineered material use); USES (Uses)
 (electroluminescent devices and electrophotog. display devices
 using star-burst arom. amines)

L33 ANSWER 25 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:594740 HCAPLUS

DOCUMENT NUMBER: 129:283407

TITLE: Electrophotographic photoreceptor with improved
 sensitivity and durability

INVENTOR(S): Umeda, Minoru; Sakon, Yota; Ikegami, Takaaki;
 Kurimoto, Eiji

PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 223 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

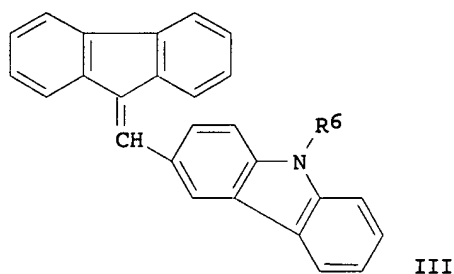
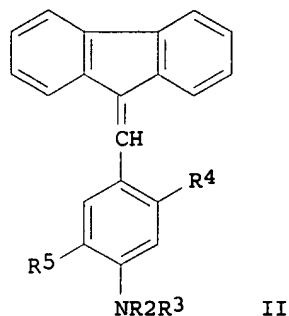
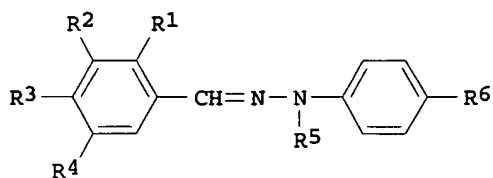
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 10239879 | A2 | 19980911 | JP 1997-62270 | 199702 28 |
| PRIORITY APPLN. INFO.: | | | JP 1997-62270 | 199702 28 |

OTHER SOURCE(S): MARPAT 129:283407
 GI



AB The title photoreceptor contains I (R1-4, R6 = H, halo, lower alkyl, lower alkoxy, di-lower alkylamino, dibenzylamino; R5 = lower alkyl, benzyl) and II (R1 = H, halo, CN, lower alkyl; R2, R3 = H, lower alkyl, benzyl; R4, R5 = H, halo, lower alkyl, lower alkoxy, di-lower alkylamino) or III (R1 = H, halo, CN, lower alkyl; R6 = H, lower alkyl, benzyl) in a photosensitive layer. Other charge transport materials are also claimed with Markush structures.

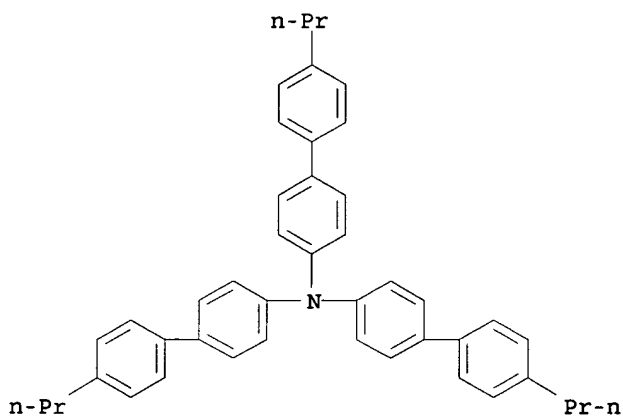
IT 138796-65-3 143764-40-3

RL: DEV (Device component use); USES (Uses)

(charge transport material in electrophotog. photoreceptor with improved sensitivity and durability)

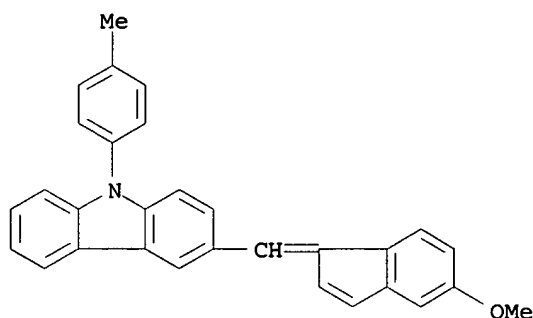
RN 138796-65-3 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-propyl-N,N-bis(4'-propyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 143764-40-3 HCAPLUS

CN 9H-Carbazole, 3-[(5-methoxy-1H-inden-1-ylidene)methyl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



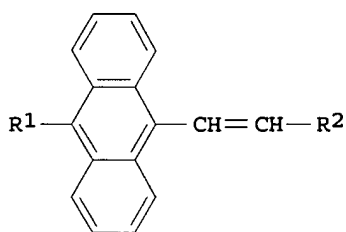
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ICS G03G005-06
CC 74-3 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)
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RL: DEV (Device component use); USES (Uses)
(charge transport material in electrophotog. photoreceptor with
improved sensitivity and durability)

L33 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:594739 HCAPLUS
DOCUMENT NUMBER: 129:283406
TITLE: Electrophotographic photoreceptor with improved
sensitivity and durability
INVENTOR(S): Umeda, Minoru; Sakon, Yota; Ikegami, Takaaki;
Kurimoto, Eiji
PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 227 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

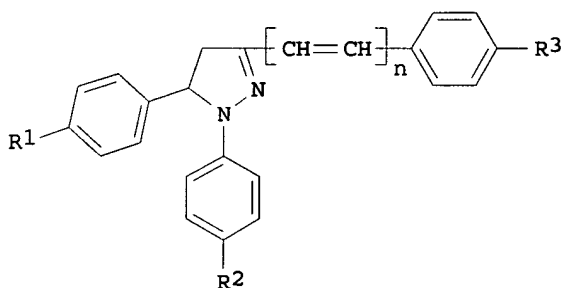
PATENT INFORMATION:

| PATENT NO. ----- | KIND ---- | DATE ----- | APPLICATION NO. ----- | DATE |
|------------------------|--------------|---------------|--------------------------|--------------|
| JP 10239877 | A2 | 19980911 | JP 1997-54083 | 199702 21 |
| PRIORITY APPLN. INFO.: | | | JP 1997-54083 | 199702 21 |

OTHER SOURCE(S): MARPAT 129:283406
GI



I



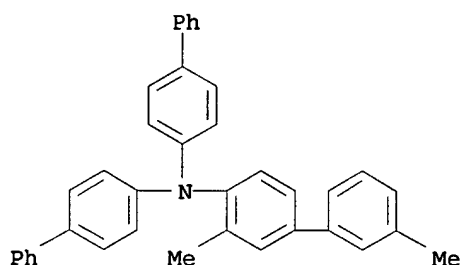
II

AB The title photoreceptor contains I (R1 = H, halo; R2 = arom., heterocyclyl) and II (R1, R3 = H, lower alkyl, lower alkoxy, di-lower alkylamino; R2 = H, lower alkyl, lower alkoxy, halo, NO2; n = 0, 1) in a photosensitive layer. Other charge transport materials are also claimed with Markush structures.

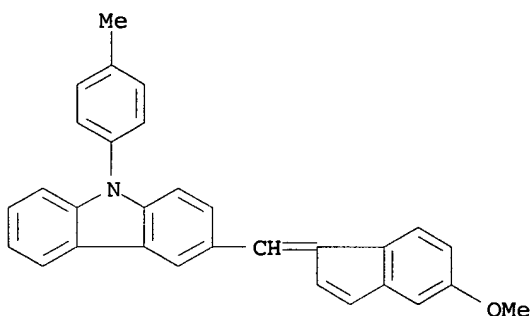
IT 138796-66-4 143764-40-3
RL: DEV (Device component use); USES (Uses)
(charge transport material in electrophotog. photoreceptor with improved sensitivity and durability)

RN 138796-66-4 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N,N-bis([1,1'-biphenyl]-4-yl)-3,3'-dimethyl-
(9CI) (CA INDEX NAME)



RN 143764-40-3 HCAPLUS
 CN 9H-Carbazole, 3-[(5-methoxy-1H-inden-1-ylidene)methyl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



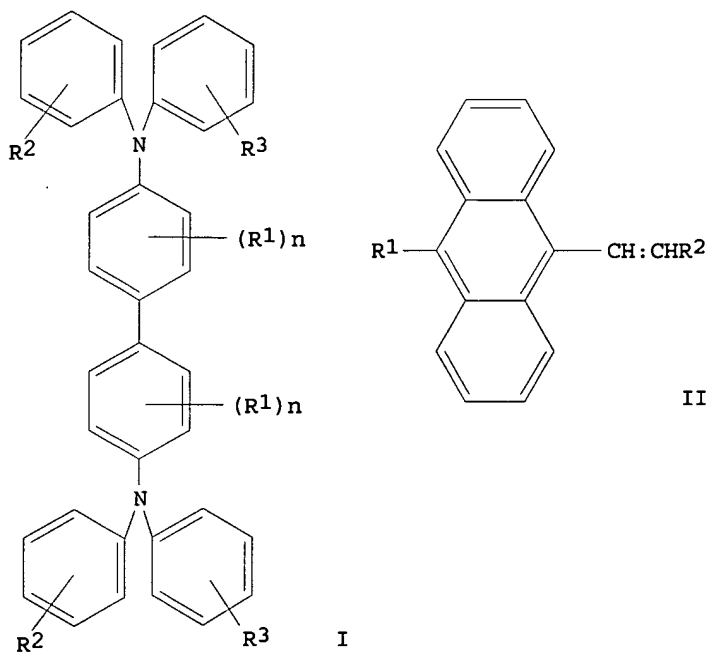
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 RL: DEV (Device component use); USES (Uses)

(charge transport material in electrophotog. photoreceptor with improved sensitivity and durability)

L33 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:594736 HCAPLUS
 DOCUMENT NUMBER: 129:283405
 TITLE: Electrophotographic photoreceptor with improved sensitivity and durability
 INVENTOR(S): Sakon, Yota; Umeda, Minoru; Ikegami, Takaaki; Kurimoto, Eiji
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 236 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| JP 10239873 | A2 | 19980911 | JP 1997-58406 | 19970226 |
| JP 2006139319 | A2 | 20060601 | JP 2006-42582 | 20060220 |
| PRIORITY APPLN. INFO.: | | | JP 1997-58406 | A3 19970226 |

OTHER SOURCE(S): MARPAT 129:283405
 GI



AB The title photoreceptor contains I (R1 = lower alkyl, lower alkoxy, halo; n = 0-4; R2, R3 = H, lower alkyl, lower alkoxy, halo) and II

(R1 = H, halo; R2 = arom., heterocyclyl) in a photosensitive layer. Other charge transport materials are also claimed with Markush structures.

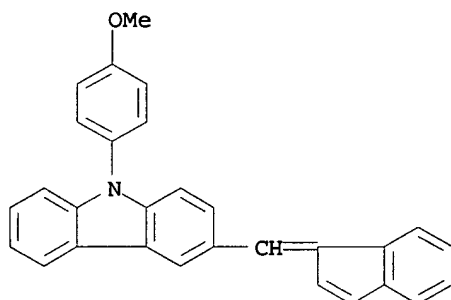
IT 143764-41-4 213840-97-2

RL: DEV (Device component use); USES (Uses)

(charge transport material in electrophotog. photoreceptor with improved sensitivity and durability)

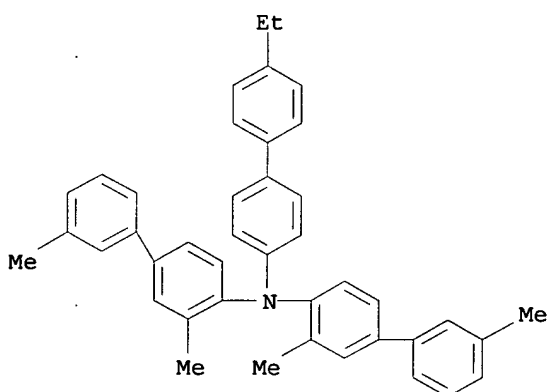
RN 143764-41-4 HCAPLUS

CN 9H-Carbazole, 3-(1H-inden-1-ylidenemethyl)-9-(4-methoxyphenyl)-
(9CI) (CA INDEX NAME)



RN 213840-97-2 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-(3,3'-dimethyl[1,1'-biphenyl]-4-yl)-N-(4'-ethyl[1,1'-biphenyl]-4-yl)-3,3'-dimethyl- (9CI) (CA INDEX NAME)



IC ICM G03G005-06

ICS G03G005-06

CC 74-3 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)

IT 443-30-1 1679-98-7 2574-34-7 5043-92-5 7245-50-3

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RL: DEV (Device component use); USES (Uses)

(charge transport material in electrophotog. photoreceptor with improved sensitivity and durability)

L33 ANSWER 28 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:576666 HCAPLUS

DOCUMENT NUMBER: 129:267867

TITLE: Electrophotographic photoreceptor containing two charge-transporting compounds

INVENTOR(S): Kurimoto, Eiji; Umeda, Minoru; Sakon, Yota; Ikegami, Takaaki

PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 243 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

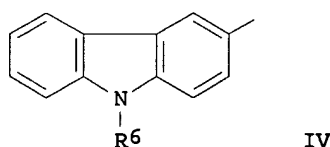
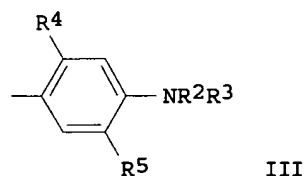
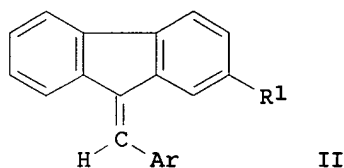
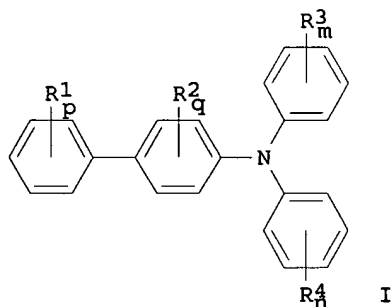
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 10232501 | A2 | 19980902 | JP 1997-49914 | 19970218 |
| PRIORITY APPLN. INFO.: | | | | 19970218 |

OTHER SOURCE(S): MARPAT 129:267867
 GI



AB The electrophotog. photoreceptor comprises a photosensitive layer on an elec. conductive support, wherein the photosensitive layer contains I and II (R1,3,4 = H, amino, etc.; R2 = H, alkoxy, etc.; m,n,p,q = 1-4; Ar = III, IV; R5,6 = substituent). The electrophotog. photoreceptor provided high sensitivity by combining 2 types of sp. charge-transporting compds.

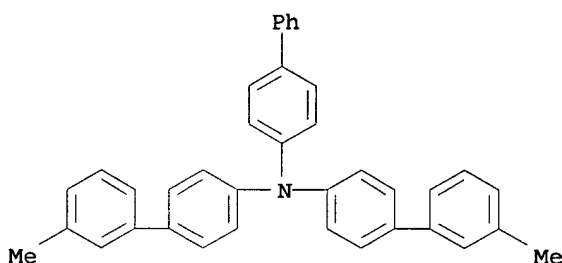
IT 138796-56-2 146967-28-4

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(charge-transporting compds. contained in electrophotog. photoreceptor)

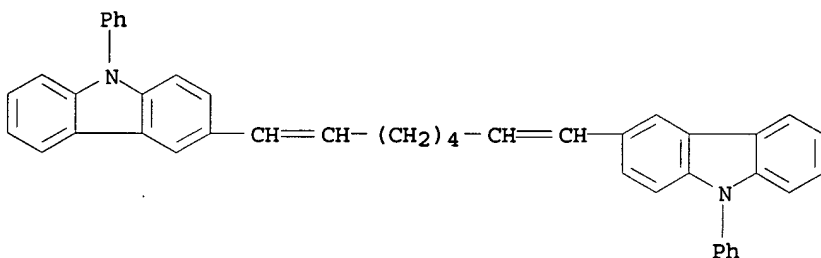
RN 138796-56-2 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, N-[1,1'-biphenyl]-4-yl-3'-methyl-N-(3'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 146967-28-4 HCAPLUS

CN 9H-Carbazole, 3,3'-(1,7-octadiene-1,8-diyl)bis[9-phenyl- (9CI) (CA INDEX NAME)



IC ICM G03G005-06

ICS G03G005-06; C07C211-54; C07C217-92; C07C323-37

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 65419-39-8 70366-84-6 70367-14-5 70419-90-8 72924-73-3
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213531-17-0

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(charge-transporting compds. contained in electrophotog. photoreceptor)

L33 ANSWER 29 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:282344 HCAPLUS

DOCUMENT NUMBER: 129:10595

TITLE: Photoconductive imaging member

INVENTOR(S): Hu, Nan-xing; Liu, Ping; Ong, Beng S.

PATENT ASSIGNEE(S): Xerox Corp., USA

SOURCE: U.S., 17 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. ----- | KIND ---- | DATE ----- | APPLICATION NO. ----- | DATE |
|------------------------|--------------|---------------|--------------------------|-------------------|
| US 5747205 | A | 19980505 | US 1997-807487 | 199702 27 |
| JP 10312073 | A2 | 19981124 | JP 1998-47123 | 199802 27 |
| PRIORITY APPLN. INFO.: | | | US 1997-807487 | A 199702 27 |
| | | | US 1997-807510 | A 199702 27 |

OTHER SOURCE(S): MARPAT 129:10595
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB A photoconductive imaging member comprises a starburst arom. amine compd. of the formula N(A1Ra)(A2Rb)A3Rc wherein A1-3 independently represent biaryl; Ra, Rb, and Rc independently represent one of the groups of the formulas NArlAr2, I, and II wherein Ar1 and Ar2 independently represent aryl; R1-8 independently represent hydrogen, halogens, hydrocarbon groups, and alkoxy; and X represents oxygen, sulfur, or alkylene.

IT 207447-37-8 207447-41-4 207447-43-6

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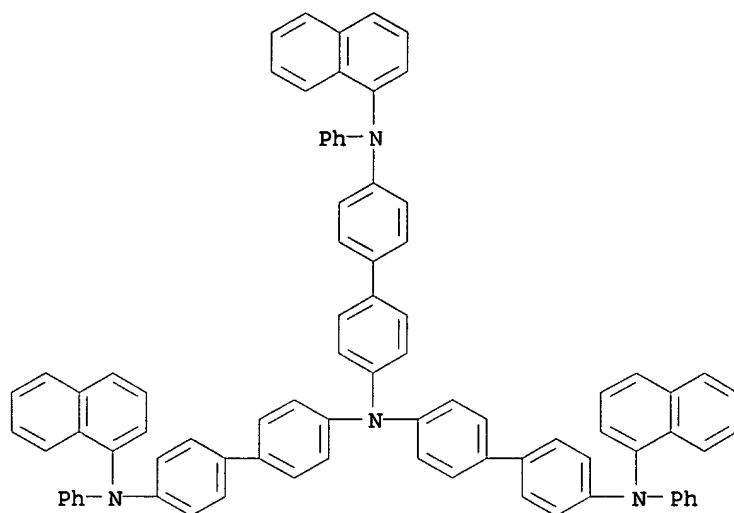
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RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrophotog. photoreceptors contg.)

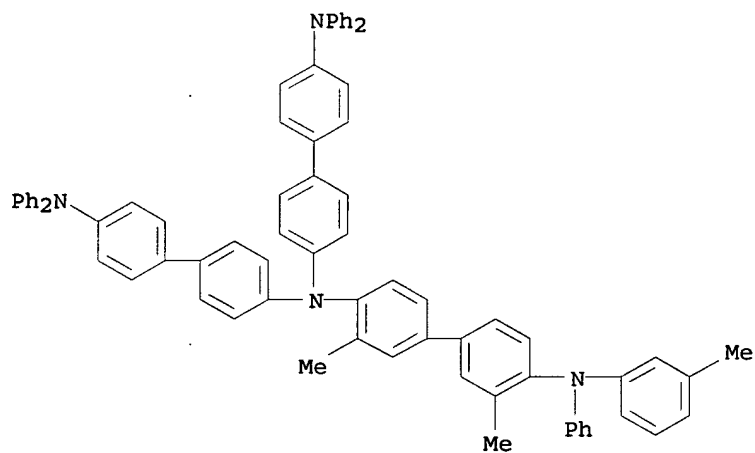
RN 207447-37-8 HCAPLUS

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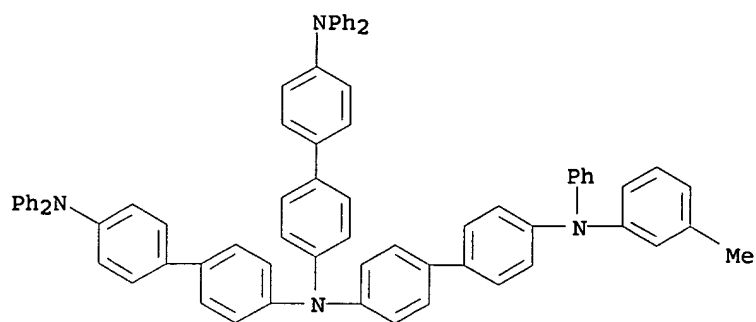
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CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-3,3'-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI)
(CA INDEX NAME)



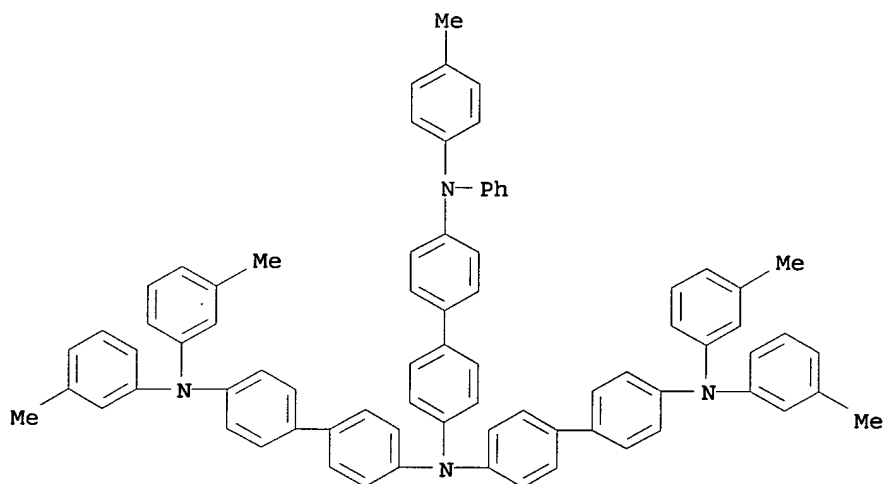
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CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



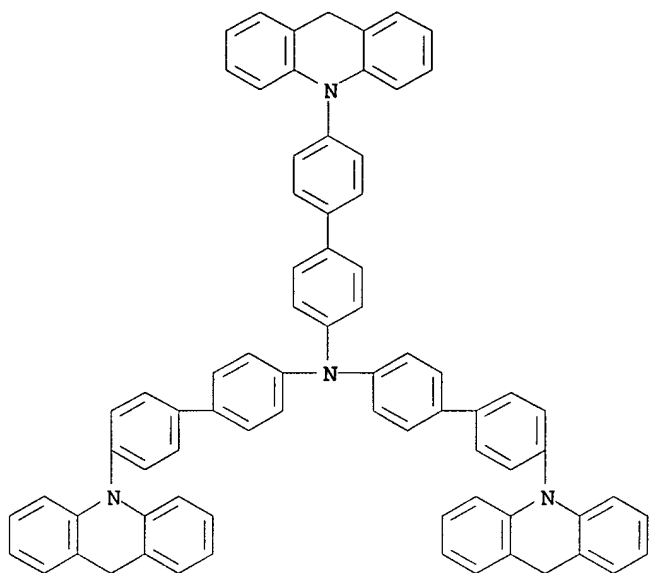
RN 207447-44-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(3-methylphenyl)amino] [1,1'-biphenyl]-4-yl]-N'-(4-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



RN 207447-46-9 HCAPLUS

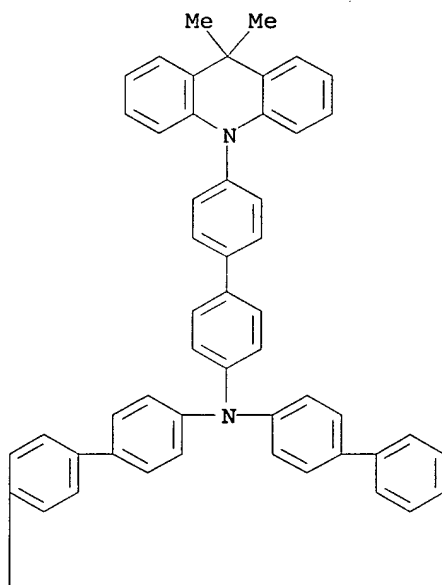
CN [1,1'-Biphenyl]-4-amine, 4'-(10(9H)-acridinyl)-N,N-bis[4'-(10(9H)-acridinyl) [1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



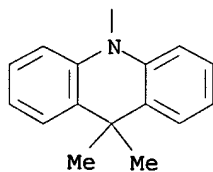
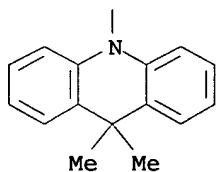
RN 207447-48-1 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9,9-dimethyl-10(9H)-acridinyl)-N,N-bis[4'-(9,9-dimethyl-10(9H)-acridinyl)[1,1'-biphenyl]-4-yl]- (9CI)
(CA INDEX NAME)

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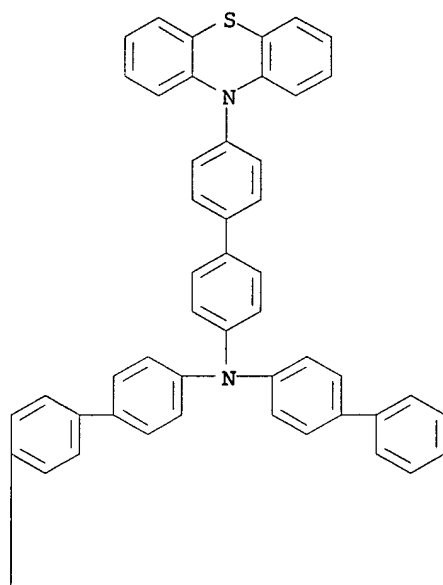


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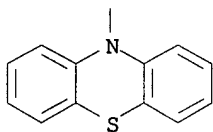
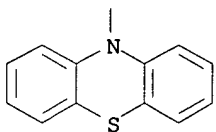


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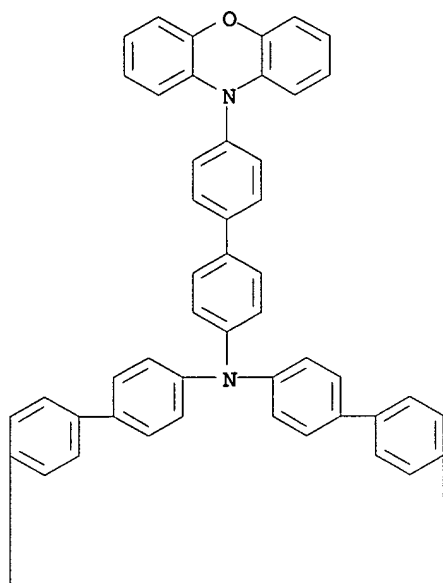


PAGE 2-A

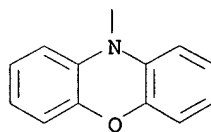
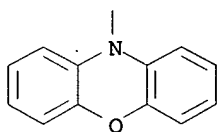


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PAGE 1-A

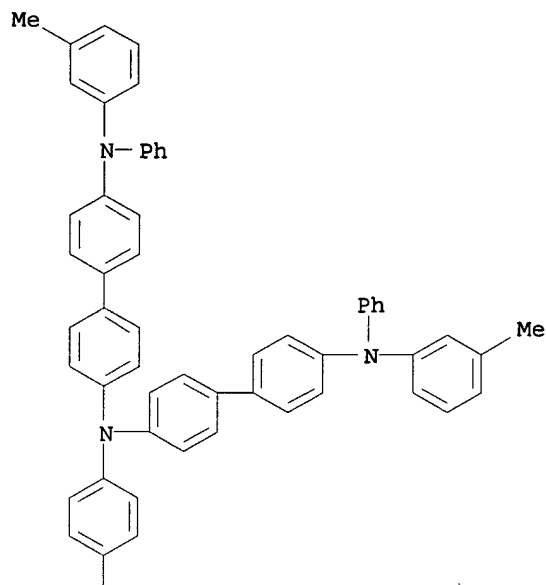


PAGE 2-A

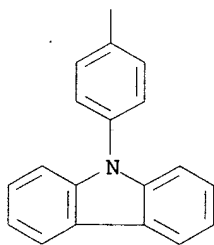


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PAGE 1-A

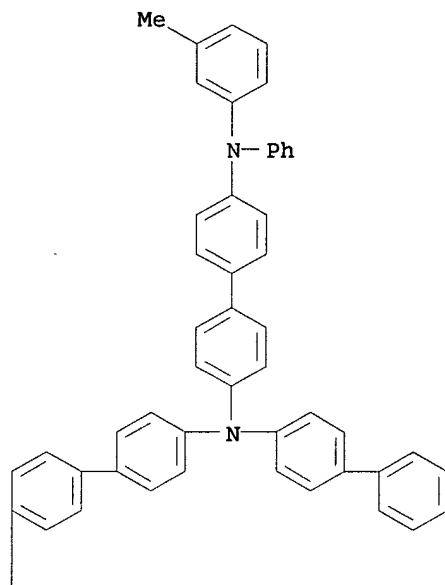


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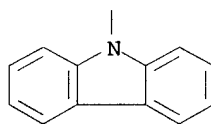
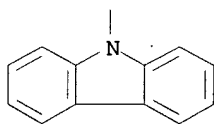


RN 207447-55-0 HCAPLUS
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

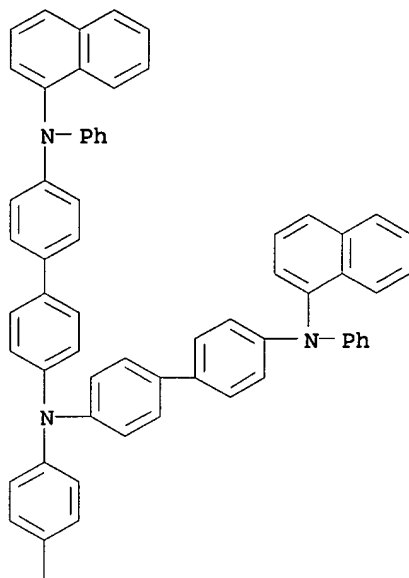


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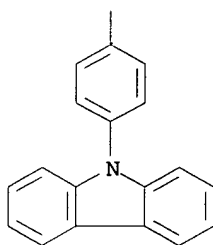


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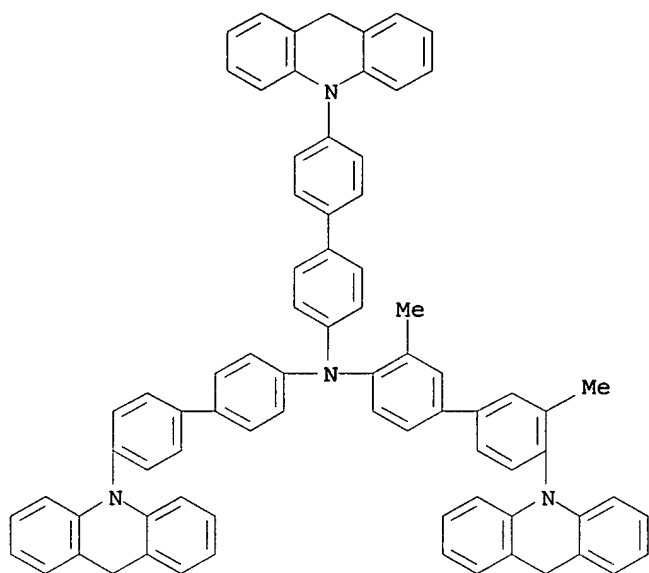
PAGE 1-A



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RN 207447-59-4 HCAPLUS
CN [1,1'-Biphenyl]-4-amine, 4'-(10(9H)-acridinyl)-N,N-bis[4'-(10(9H)-acridinyl)[1,1'-biphenyl]-4-yl]-3,3'-dimethyl- (9CI) (CA INDEX NAME)



IT 128396-99-6P 207447-28-7P 207447-31-2P

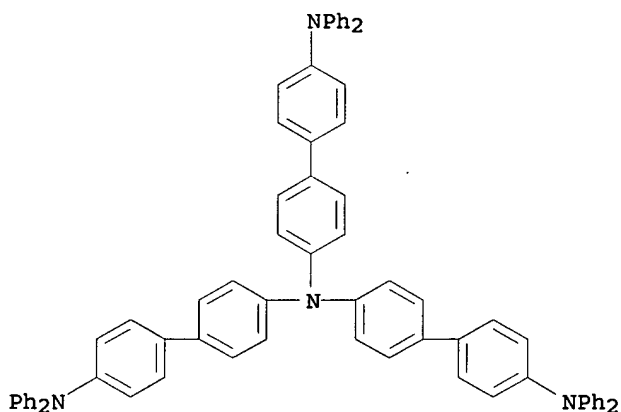
207447-34-5P

RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(prepn. and use in electrophotog. photoreceptors)

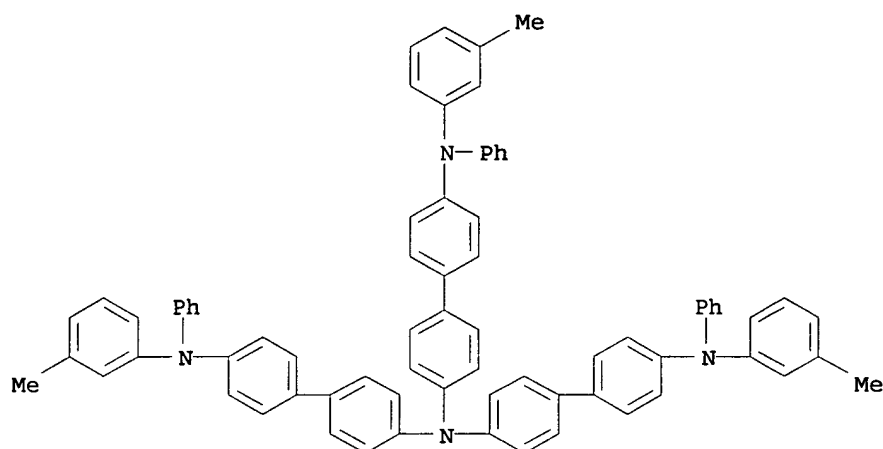
RN 128396-99-6 HCAPLUS

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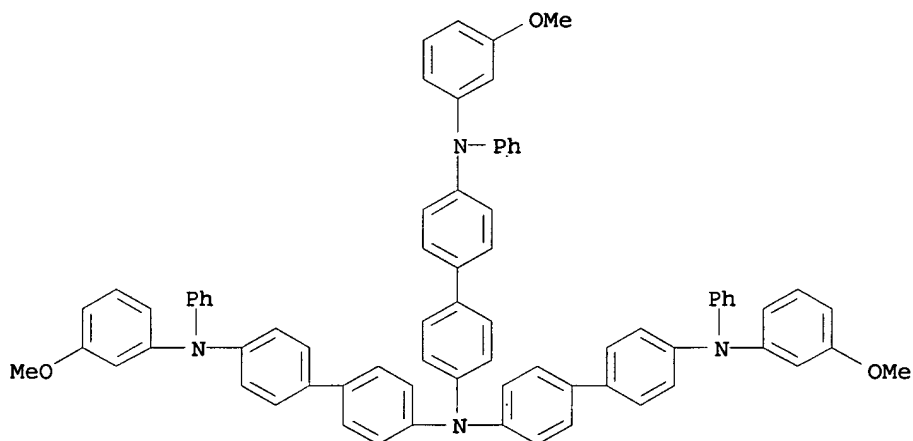
RN 207447-28-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(3-methylphenyl)-N',N'-bis[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)



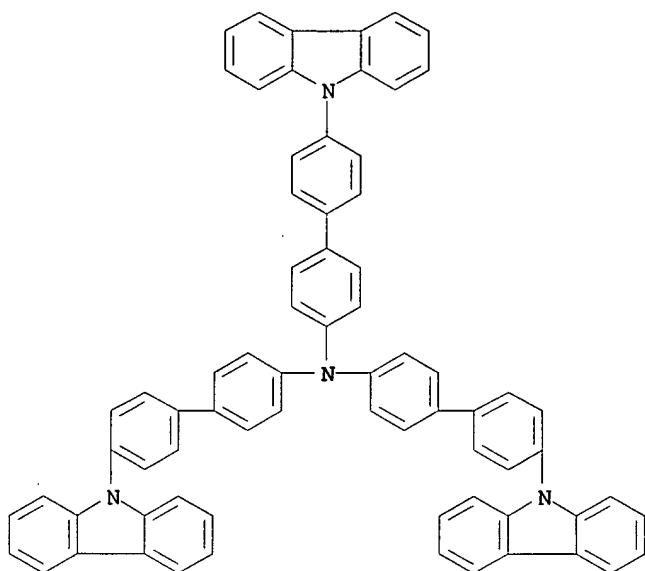
RN 207447-31-2 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(3-methoxyphenyl)-N',N'-bis[4'-[(3-methoxyphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 207447-34-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

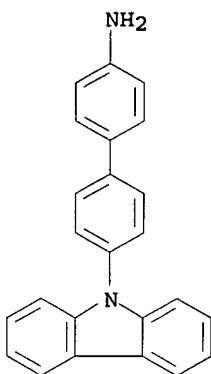


IT 207447-26-5 207447-27-6

RL: RCT (Reactant); TEM (Technical or engineered material use); RACT
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(reaction in prepg. starburst arom. amines for electrophotog.
photoreceptors)

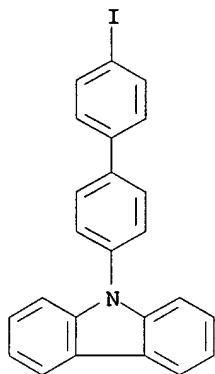
RN 207447-26-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)- (9CI) (CA INDEX
NAME)



RN 207447-27-6 HCAPLUS

CN 9H-Carbazole, 9-(4'-amino[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX
NAME)



IC ICM G03G005-047

INCL 430059000

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 207447-37-8 207447-39-0 207447-41-4

207447-43-6 207447-44-7 207447-46-9

207447-48-1 207447-49-2 207447-51-6

207447-53-8 207447-55-0 207447-57-2

207447-59-4

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrophotog. photoreceptors contg.)

IT 128396-99-6P 207447-28-7P 207447-30-1P

207447-31-2P 207447-34-5P

RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(prepn. and use in electrophotog. photoreceptors)

IT 66-71-7, 1st,10-Phenanthroline 84161-87-5, N,N-Diphenylbenzidine 195443-34-6 207447-18-5 207447-21-0 207447-24-3

207447-26-5 207447-27-6

RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)

(reaction in prepg. starburst arom. amines for electrophotog. photoreceptors)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L33 ANSWER 30 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:543399 HCAPLUS

DOCUMENT NUMBER: 122:278049

TITLE: Electrophotographic photoreceptor with excellent characteristics in repetitive use

INVENTOR(S): Suzuki, Yasuo; Niimi, Tatsuya; Umeda, Minoru

PATENT ASSIGNEE(S): Ricoh K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 118 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------|
| JP 06175381 | A2 | 19940624 | JP 1992-110731 | 199204 |

PRIORITY APPLN. INFO.:

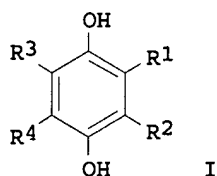
JP 1992-110731

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199204

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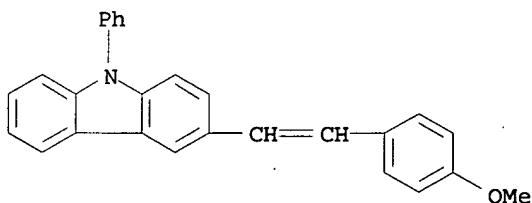
AB In the title electrophotog photoreceptor having a photosensitive layer contg. an azo dye charge-generating substance, I [Cp = coupler residue] on a conductive support, a subbing layer, a single-layer photosensitive layer, laminate-type charge-generating and charge-transporting layers, or a protective layer contains a compd., II [R1-4 = H, halo, alkyl, alkenyl, aryl, other specified groups].

IT 84746-55-4 90266-72-1 162955-57-9
162955-65-9 162956-39-0 162956-40-3
162956-41-4

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(electrophotog. photoreceptor with excellent characteristics in repetitive use)

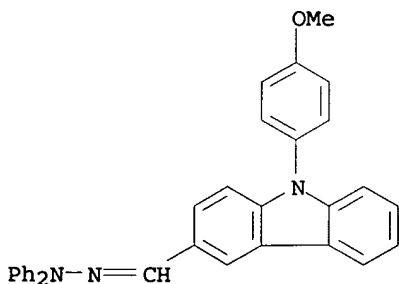
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RN 90266-72-1 HCAPLUS

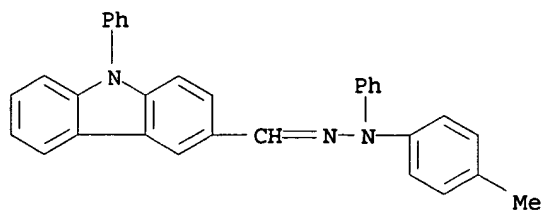
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RN 162955-57-9 HCAPLUS

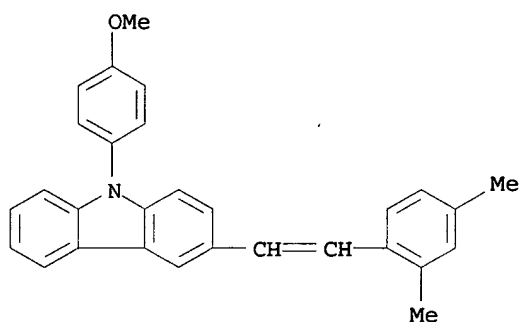
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methylphenyl)phenylhydrazone (9CI) (CA INDEX NAME)



RN 162955-65-9 HCAPLUS

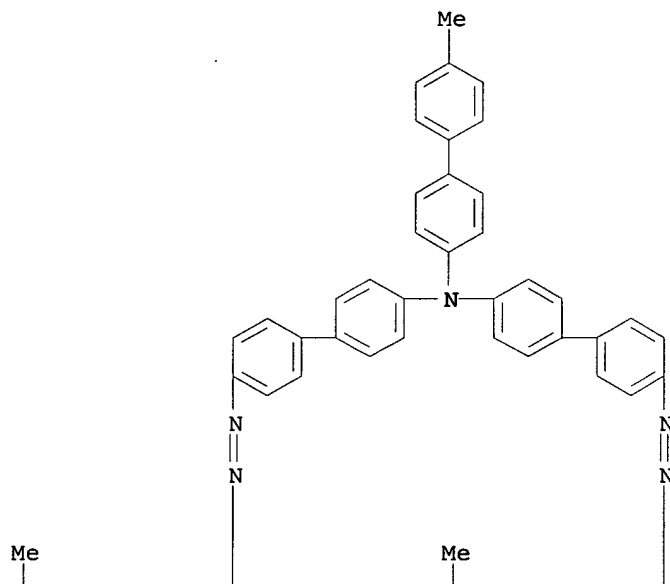
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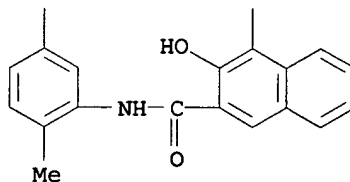
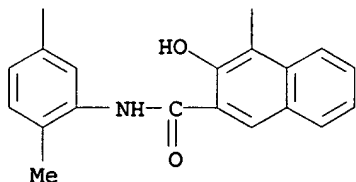
RN 162956-39-0 HCAPLUS

CN 2-Naphthalenecarboxamide, 4,4'-[[[4'-methyl[1,1'-biphenyl]-4-yl]imino]bis([1,1'-biphenyl]-4',4-diylazo)]bis[N-(2,5-dimethylphenyl)-3-hydroxy]- (9CI) (CA INDEX NAME)

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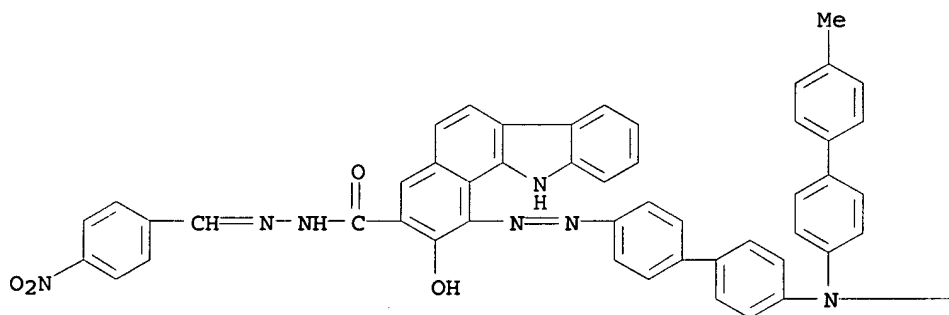
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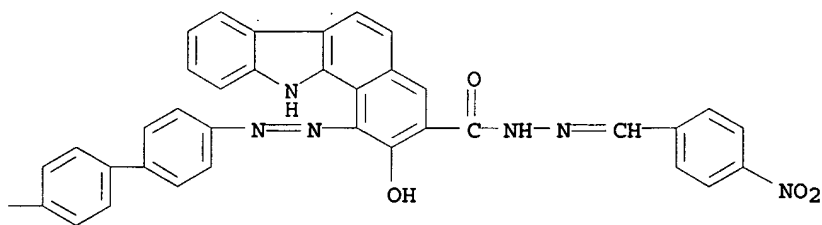
RN 162956-40-3 HCAPLUS

CN 11H-Benzo[a]carbazole-3-carboxylic acid, 1,1'-[[[4'-methyl[1,1'-biphenyl]-4-yl]iminolbis([1,1'-biphenyl]-4',4-diylazo)]bis[2-hydroxy-, bis[[[4-nitrophenyl)methylene]hydrazide] (9CI) (CA INDEX NAME)

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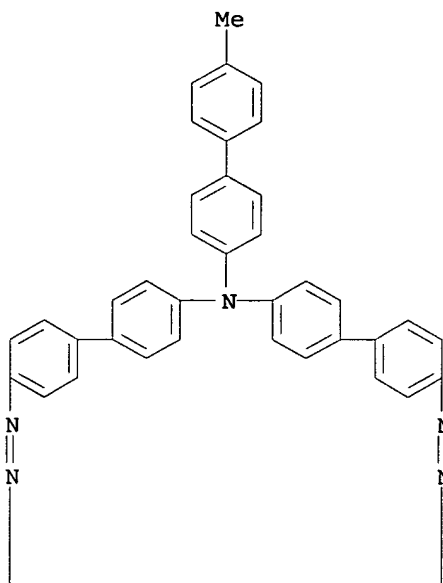
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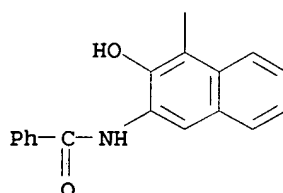
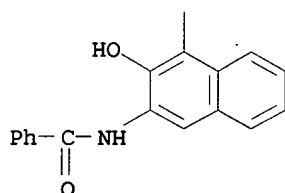
RN 162956-41-4 HCAPLUS

CN Benzamide, N,N'-[[[4'-methyl[1,1'-biphenyl]-4-yl]iminolbis([1,1'-biphenyl]-4',4-diylazo(2-hydroxy-1,3-naphthalenediyl))]]bis- (9CI) (CA INDEX NAME)

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IC ICM G03G005-05
ICS G03G005-06; G03G005-14; G03G005-147
CC 74-3 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
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RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (electrophotog. photoreceptor with excellent characteristics in
 repetitive use)

=> file reg

FILE 'REGISTRY' ENTERED AT 15:28:11 ON 01 AUG 2006

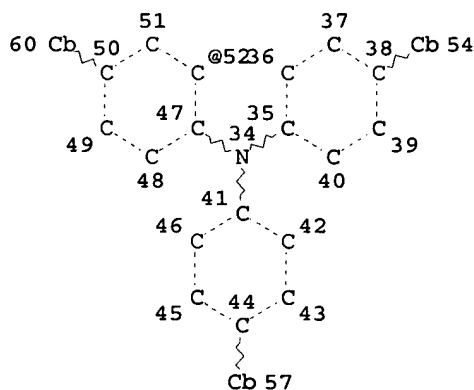
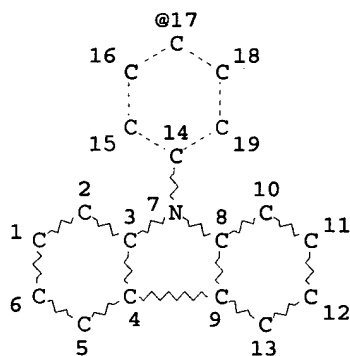
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PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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=> d l34 que stat

L9 STR



G1 62

VAR G1=17/52

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 54

GGCAT IS UNS AT 57

GGCAT IS UNS AT 60

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

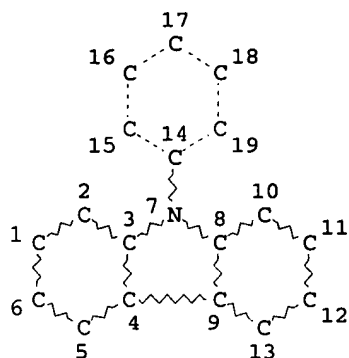
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 42

STEREO ATTRIBUTES: NONE

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L12 STR



NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L14 4618 SEA FILE=REGISTRY SUB=L11 SSS FUL L12
 L15 286 SEA FILE=REGISTRY ABB=ON PLU=ON L11 NOT L14
 L16 2405 SEA FILE=HCAPLUS ABB=ON PLU=ON L14
 L17 234 SEA FILE=HCAPLUS ABB=ON PLU=ON L15
 L18 45 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND L17
 L23 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 (L) PHOSPHORESCEN?
 L24 117 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 (L) ?LUMINESCEN?
 L25 118 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 OR L24
 L27 104 SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND DEV/RL AND
 USES/RL
 L28 36 SEA FILE=HCAPLUS ABB=ON PLU=ON L27 AND PHOTOCHEM?/SC,SX
 L30 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 (L) PHOSPHORESCEN?
 L31 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND PHOSPHORESCEN?
 L32 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND PHOTOCHEM?/SC,SX
 L33 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 OR L31 OR L32
 L34 26 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 NOT L33

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 15:28:21 ON 01 AUG 2006
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
 COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

=> d l34 1-26 ibib abs hitstr hitind

L34 ANSWER 1 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2006:538865 HCAPLUS
 DOCUMENT NUMBER: 145:37410
 TITLE: Organic electroluminescent device
 INVENTOR(S): Kawamura, Hisayuki; Kubota, Mineyuki; Funahashi, Masakazu
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 67 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2006059512 | A1 | 20060608 | WO 2005-JP21469 | 20051122 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| JP 2006156888 | A2 | 20060615 | JP 2004-348675 | 20041201 |
| US 2006158102 | A1 | 20060720 | US 2005-288281 | 20051129 |
| PRIORITY APPLN. INFO.: | | | JP 2004-348675 | A |
| | | | | 20041201 |

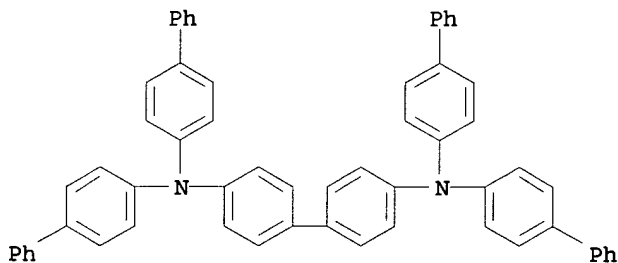
AB Disclosed is an org. electroluminescent device comprising at least an anode, a cathode and an org. light-emitting layer interposed between the electrodes, wherein the org. light-emitting layer contains one or more host materials, a hole-trapping dopant and an electron-trapping dopant. By having the hole-trapping dopant and the electron-trapping dopant coexist in the org. light-emitting layer, the org. electroluminescent device can have a longer life.

IT 164724-35-0

RL: DEV (Device component use); USES (Uses)
(hole transport layers; org. electroluminescent devices
contg. light emitting layers contg. hole- and electron trapping dopants)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76

IT 80663-92-9

RL: MOA (Modifier or additive use); USES (Uses)
(electron trapping dopants; org. electroluminescent devices)

contg. light emitting layers contg. hole- and electron trapping dopants)

IT 209980-53-0
 RL: DEV (Device component use); USES (Uses)
 (hole implantation layers; org. electroluminescent devices contg. light emitting layers contg. hole- and electron trapping dopants)

IT 164724-35-0
 RL: DEV (Device component use); USES (Uses)
 (hole transport layers; org. electroluminescent devices contg. light emitting layers contg. hole- and electron trapping dopants)

IT 693289-38-2
 RL: MOA (Modifier or additive use); USES (Uses)
 (hole trapping dopants; org. electroluminescent devices contg. light emitting layers contg. hole- and electron trapping dopants)

IT 667940-34-3 853945-27-4 855828-36-3 889362-53-2
 RL: DEV (Device component use); USES (Uses)
 (light emitting layers; org. electroluminescent devices contg. light emitting layers contg. hole- and electron trapping dopants)

IT 183748-02-9, Electron 870774-17-7
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent devices contg. light emitting layers contg. hole- and electron trapping dopants)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2006:516073 HCAPLUS
 DOCUMENT NUMBER: 144:497961
 TITLE: Organic electroluminescent device and its manufacture
 INVENTOR(S): Nakamata, Yuko
 PATENT ASSIGNEE(S): Fuji Electric Holding Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| ----- | --- | ----- | ----- | |
| JP 2006139969 | A2 | 20060601 | JP 2004-327029 | 20041110 |
| | | | | 20041110 |

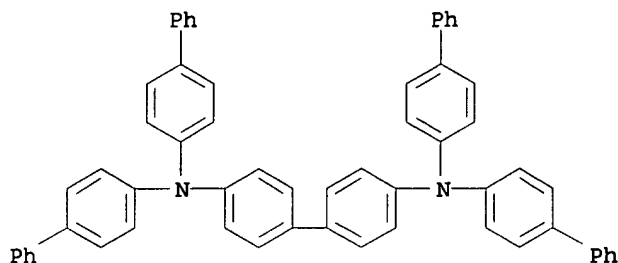
PRIORITY APPLN. INFO.: JP 2004-327029

AB The invention relates to an org. electroluminescent device comprising a transparent electrode made of a conductive metal oxide, a buffer layer for facilitating the current injection, an org. electroluminescent layer including the active layer, and a reflective electrode, stacked in that order on a substrate, wherein the metal constituting the transparent electrode, its fluoride, Al and AlF₃ are contained in the buffer layer for enhancing the current injection efficiency as well as maintaining the sufficient transparency.

IT 164724-35-0
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent device having buffer layer for enhancing current injection)

RN 164724-35-0 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-

yl)- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 147-14-8, Copper phthalocyanine 2085-33-8, Al 8q 7429-90-5, Aluminum, uses 7440-66-6, Zinc, uses 7783-49-5, Zinc fluoride 7784-18-1, Aluminum fluoride 7789-24-4, Lithium fluoride, uses 117944-65-7, Indium zinc oxide 142289-08-5, DPVBi 164724-35-0

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent device having buffer layer for enhancing current injection)

L34 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:53263 HCAPLUS

DOCUMENT NUMBER: 144:160369

TITLE: Aromatic amine derivative and organic electroluminescent device using same

INVENTOR(S): Yabunouchi, Nobuhiro; Kawamura, Hisayuki; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 76 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2006006505 | A1 | 20060119 | WO 2005-JP12606 | 20050707 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| US 2006159957 | A1 | 20060720 | US 2005-295602 | 20051207 |

PRIORITY APPLN. INFO.:

JP 2004-206969

A

20040714

WO 2005-JP12606

A1

200507

07

AB Disclosed is a novel arom. amine deriv. having an asym. structure. Also disclosed is an org. electroluminescent device wherein an org. thin film layer composed of one or more layers including at least a light-emitting layer is interposed between a cathode and an anode and at least one layer of the org. thin film layer contains the arom. amine deriv. by itself or as a component of a mixt. This org. electroluminescent device hardly suffers from crystn. of mols., and has improved prodn. yield and long life. The arom. amine deriv. enables to realize such an org. electroluminescent device.

IT 873857-64-8 873857-65-9 873857-67-1

873857-68-2 873857-69-3 873857-70-6

873857-71-7 873857-74-0 873857-75-1

873857-76-2 873857-77-3 873857-79-5

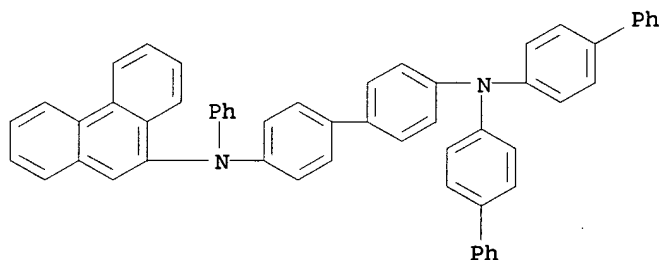
873857-81-9 873857-82-0

RL: DEV (Device component use); USES (Uses)

(arom. amine deriv. and org. electroluminescent device using same)

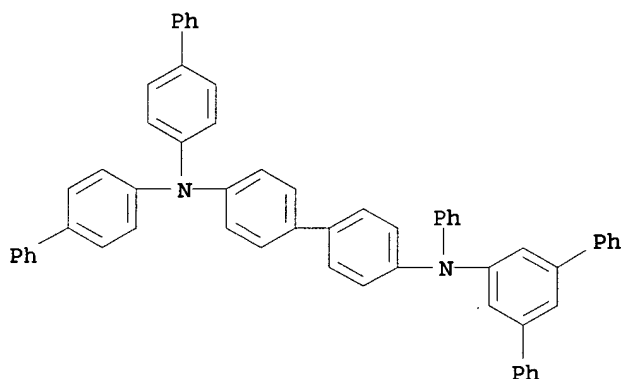
RN 873857-64-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[1,1'-biphenyl]-4-yl-N'-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



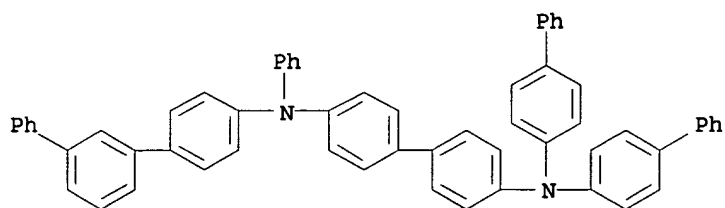
RN 873857-65-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N'-phenyl-N'-[1,1':3',1''-terphenyl]-5'-yl- (9CI) (CA INDEX NAME)



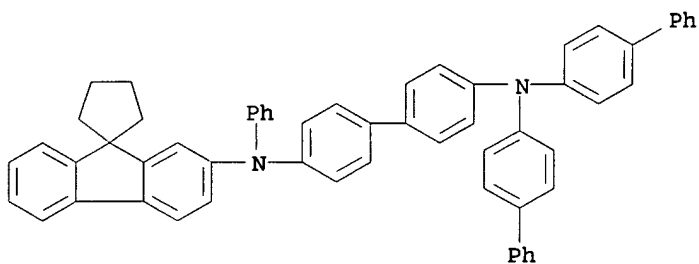
RN 873857-67-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N'-phenyl-N'-[1,1':3',1''-terphenyl]-4-yl- (9CI) (CA INDEX NAME)



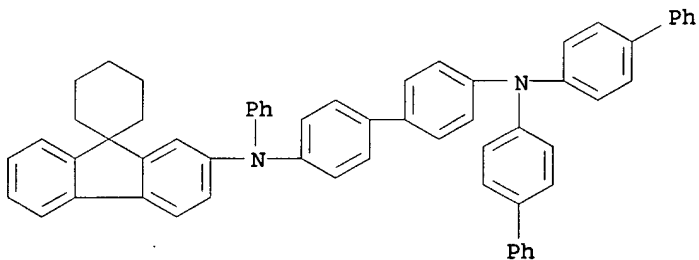
RN 873857-68-2 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[1,1'-biphenyl]-4-yl-N'-phenyl-N'-spiro[cyclopentane-1,9'-[9H]fluoren]-2'-yl- (9CI) (CA INDEX NAME)



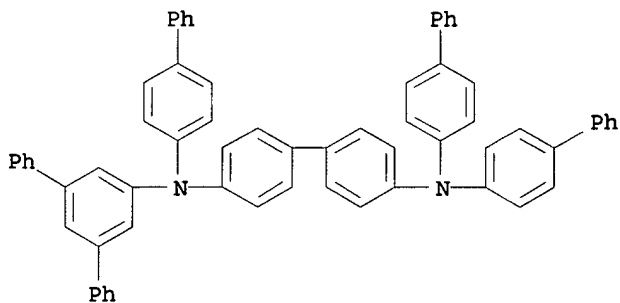
RN 873857-69-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[1,1'-biphenyl]-4-yl-N'-phenyl-N'-spiro[cyclohexane-1,9'-[9H]fluoren]-2'-yl- (9CI) (CA INDEX NAME)



RN 873857-70-6 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N'-tris([1,1'-biphenyl]-4-yl)-N'-[1,1':3',1''-terphenyl]-5'-yl- (9CI) (CA INDEX NAME)

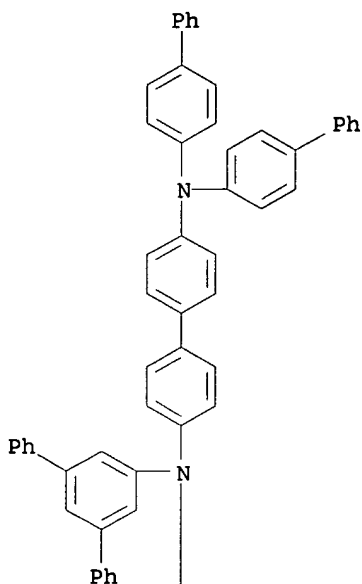


RN 873857-71-7 HCAPLUS

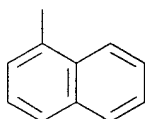
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N'-1-

naphthalenyl-N'-[1,1':3',1''-terphenyl]-5'-yl- (9CI) (CA INDEX NAME)

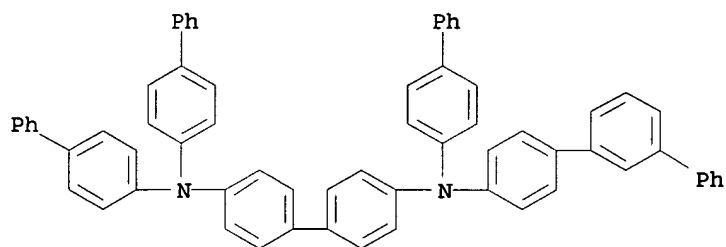
PAGE 1-A



PAGE 2-A

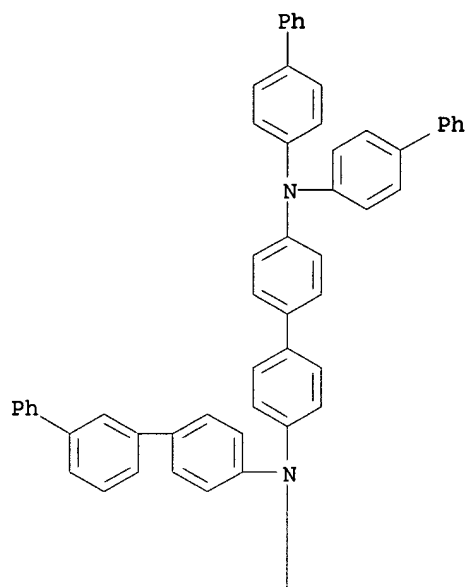


| | | |
|----|--|---------|
| RN | 873857-74-0 | HCAPLUS |
| CN | [1,1'-Biphenyl]-4,4'-diamine, N,N,N'-tris([1,1'-biphenyl]-4-yl)-N'-[1,1':3',1''-terphenyl]-4-yl- (9CI) (CA INDEX NAME) | |

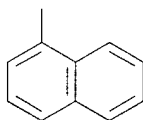


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|----|--|---------|
| RN | 873857-75-1 | HCAPLUS |
| CN | [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N'-1-naphthalenyl-N'-[1,1':3',1''-terphenyl]-4-yl- (9CI) (CA INDEX NAME) | |

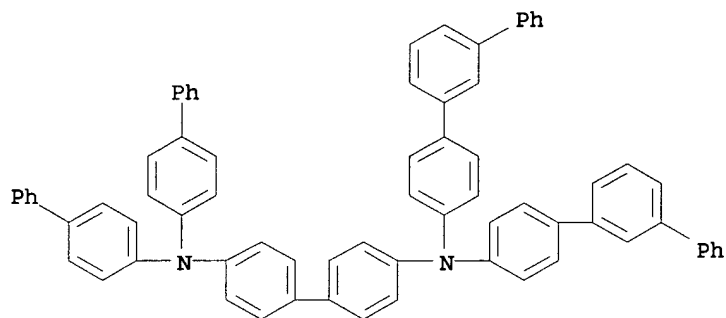
PAGE 1-A



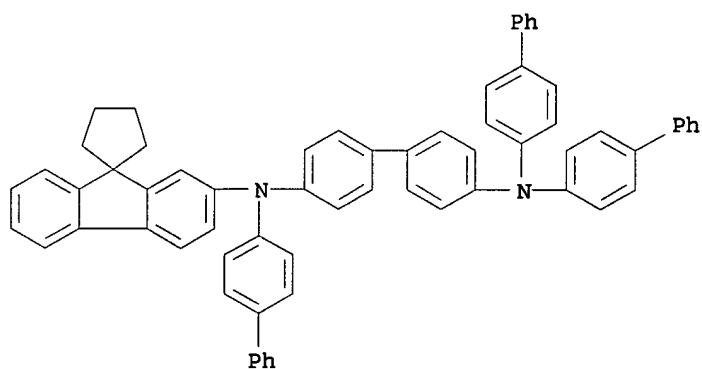
PAGE 2-A



RN 873857-76-2 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N',N'-bis([1,1':3',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)

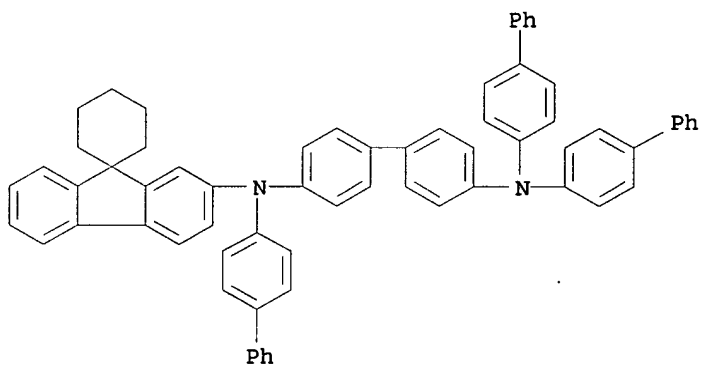


RN 873857-77-3 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N'-tris[1,1'-biphenyl]-4-yl-N'-spiro[cyclopentane-1,9'-[9H]fluorene]-2'-yl- (9CI) (CA INDEX NAME)



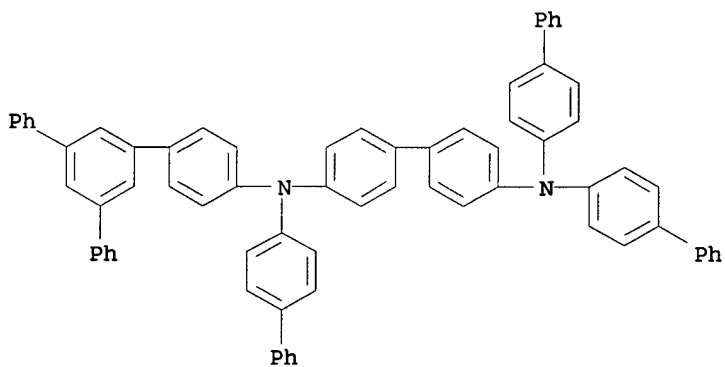
RN 873857-79-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N'-tris[1,1'-biphenyl]-4-yl-N'-spiro[cyclohexane-1,9'-(9H)fluoren]-2'-yl- (9CI) (CA INDEX NAME)



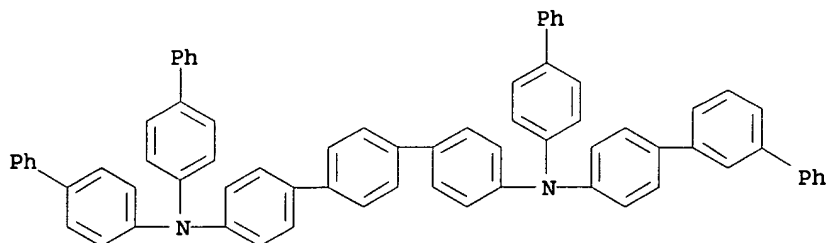
RN 873857-81-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N'-tris([1,1'-biphenyl]-4-yl)-N'-5'-phenyl[1,1':3',1''-terphenyl]-4-yl- (9CI) (CA INDEX NAME)



RN 873857-82-0 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine, N,N,N'-tris([1,1'-biphenyl]-4-yl)-N'-[1,1':3',1''-terphenyl]-4-yl- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)

IT Amines, uses

RL: DEV (Device component use); USES (Uses)

(arom., deriv.; arom. amine deriv. and org. electroluminescent
device using same)

IT 226086-65-3 873857-64-8 873857-65-9
873857-66-0 873857-67-1 873857-68-2
873857-69-3 873857-70-6 873857-71-7
873857-72-8 873857-73-9 873857-74-0 873857-75-1
873857-76-2 873857-77-3 873857-78-4
873857-79-5 873857-80-8 873857-81-9
873857-82-0 873857-83-1

RL: DEV (Device component use); USES (Uses)

(arom. amine deriv. and org. electroluminescent device
using same)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L34 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:10788 HCAPLUS

DOCUMENT NUMBER: 144:117899

TITLE: Top-emitting organic electroluminescent devices
showing resistance to water and oxygen

INVENTOR(S): Kimura, Hiroshi

PATENT ASSIGNEE(S): Fuji Electric Holding Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2006004721 | A2 | 20060105 | JP 2004-178792 | 20040616 |

PRIORITY APPLN. INFO.: JP 2004-178792

20040616

AB The device comprises a substrate, a reflection electrode, an org.
electroluminescent layer, a transparent electrode, and a trapping
agent layer, with the trapping layer contg. ≥ 1 compd(s).
contained in the layers forming the device. The trapping layer may
be formed by vapor deposition. Also claimed are the said devices
including ≥ 1 trapping agents selected from anthracene,
coronene, perylene, rubrene, C₆H₅XZ (X = C₆H₄, etc.; Z = Ph,
naphthyl, etc), certain complexes of Al, Be, Zn, Mg, Ga, etc.,
oxadiazoles, triazoles, thiophenes, etc. The org.

electroluminescent layers can be protected from water and O.

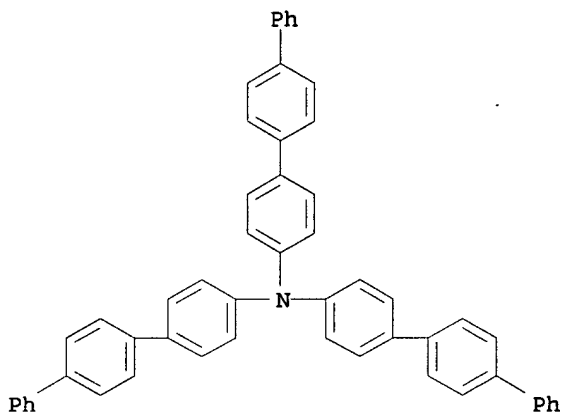
IT 145693-79-4 198639-41-7 372190-65-3

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(oxygen- and water-trapping agent; top-emitting org. electroluminescent devices equipped with water- and oxygen-trapping layers)

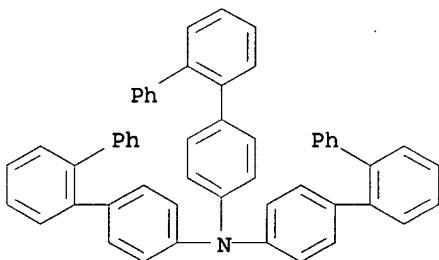
RN 145693-79-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



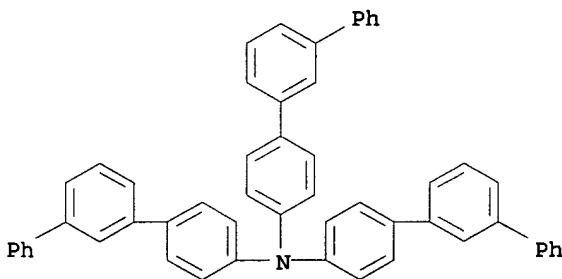
RN 198639-41-7 HCAPLUS

CN [1,1':2',1''-Terphenyl]-4-amine, N,N-bis([1,1':2',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 372190-65-3 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4-amine, N,N-bis([1,1':3',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)

IT 57-41-0, DPH
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(DPH, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 216454-28-3, FFD
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(FFD, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 94928-86-6, Ir(ppy)₃
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(Ir(ppy)₃, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 246857-02-3, PFFA
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(PFFA, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 303111-06-0, TFATA
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(TFATA, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 124729-98-2, m-MTDATA
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(m-MTDATA, oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 120-12-7, Anthracene, uses 147-14-8, Copper phthalocyanine
191-07-1, Coronene 198-55-0, Perylene 517-51-1, Rubrene
557-34-6, Zinc diacetate 574-93-6, Phthalocyanine 841-76-9
852-38-0, PBD 917-23-7, TPP 1608-30-6 2085-33-8, Alq₃
2785-54-8, TPC 6625-81-6 13978-85-3 14074-80-7 14128-73-5
14752-00-2 15276-55-8 17904-86-8 18747-41-6 20441-06-9
23467-27-8 31248-39-2, Platinum octaethylporphyrin 58280-31-2
67952-28-7 89248-08-8 123847-85-8, α -NPD 138372-67-5
142289-08-5, DPVBi **145693-79-4** 146162-54-1, BALq
148044-09-1 148044-16-0 148272-12-2 148896-39-3 150405-69-9,
TAZ 157019-71-1 159526-24-6 171408-95-0 175792-00-4
185690-39-5 185690-41-9, 2-TNATA 189363-47-1 **198639-41-7**
201747-59-3 201747-60-6 207514-97-4 213621-16-0,
5,5'-Bis(dimesitylboryl)-2,2'-bithiophene 213621-17-1
214132-60-2 215596-68-2 292827-46-4, NTPA **372190-65-3**
501686-89-1 872341-60-1 872341-61-2 872359-57-4
RL: **DEV (Device component use)**; MOA (Modifier or additive
use); TEM (Technical or engineered material use); **USES**
(Uses)
(oxygen- and water-trapping agent; top-emitting org.
electroluminescent devices equipped with water- and
oxygen-trapping layers)

IT 134008-76-7, p-BPD
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES
 (Uses)
 (p-BPD, oxygen- and water-trapping agent; top-emitting org. electroluminescent devices equipped with water- and oxygen-trapping layers)

IT 126717-23-5, p-DPA-TDAB
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES
 (Uses)
 (p-DPA-TDAB, oxygen- and water-trapping agent; top-emitting org. electroluminescent devices equipped with water- and oxygen-trapping layers)

IT 281678-63-5, p-PMTDATA
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES
 (Uses)
 (p-PMTDATA, oxygen- and water-trapping agent; top-emitting org. electroluminescent devices equipped with water- and oxygen-trapping layers)

L34 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1005056 HCAPLUS
 DOCUMENT NUMBER: 143:295337
 TITLE: Organic electroluminescence display device
 INVENTOR(S): Yamamichi, Keiko; Fukuoka, Kenichi; Yuasa, Kimihiro; Hosokawa, Chishio; Kuma, Hitoshi
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 70 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2005086539 | A1 | 20050915 | WO 2005-JP2558 | 20050218 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| PRIORITY APPLN. INFO.: | | | JP 2004-62774 | A |
| | | | | 20040305 |
| | | | JP 2004-151625 | A |
| | | | | 20040521 |

AB An org. EL display device has a substrate, and a first org. EL element part and a second org. EL element part which are arranged in parallel on the same plane of the substrate. The first org. EL element part at least includes a light reflecting conductor layer,

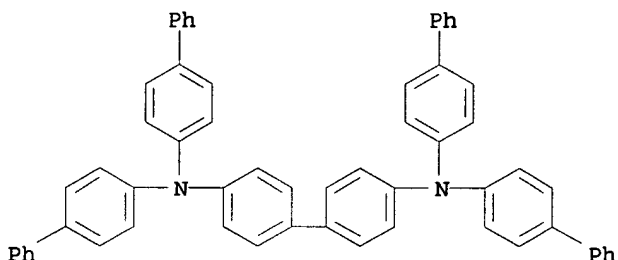
an org. light emitting medium layer and a transparent electrode layer in this order, and inside or outside of the org. light emitting medium layer or the transparent electrode layer, a light reflecting layer is provided. The second org. EL element part at least includes the light reflecting conductor layer, a first inorg. compd. layer, an org. light-emitting medium layer and a transparent electrode layer in this order, and inside or outside of the org. light-emitting medium layer or the transparent electrode layer, the light reflecting layer is provided. The emission spectrum of light emitted from the first org. EL element part and that from the second org. EL element part are different.

IT 164724-35-0

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent display device)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-24

ICS H05B033-12; H05B033-14; H05B033-26; H05B033-28

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 74

IT 1308-38-9, Chromium oxide, uses 2085-33-8, Alq3 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses 7440-47-3, Chromium, uses 7789-24-4, Lithium fluoride, uses 11105-01-4, Silicon nitride oxide 117944-65-7, Indium zinc oxide 123847-85-8, α -NPD 164724-35-0 209980-47-2 260550-68-3 312497-12-4 462631-35-2 667940-34-3

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent display device)

IT 331965-31-2 782504-36-3

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(org. electroluminescent display device)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1005055 HCAPLUS

DOCUMENT NUMBER: 143:295336

TITLE: Organic electroluminescent device and organic electroluminescent display

INVENTOR(S): Kawamura, Hisayuki; Junke, Tadanori; Fukuoka, Kenichi

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 63 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|------------|
| ----- | ---- | ----- | ----- | |
| WO 2005086538 | A1 | 20050915 | WO 2005-JP862 | 20050124 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2005251639 | A2 | 20050915 | JP 2004-62772 | 20040305 |
| JP 2005259550 | A2 | 20050922 | JP 2004-70075 | 20040312 |
| PRIORITY APPLN. INFO.: | | | JP 2004-62772 | A 20040305 |
| | | | JP 2004-70075 | A 20040312 |

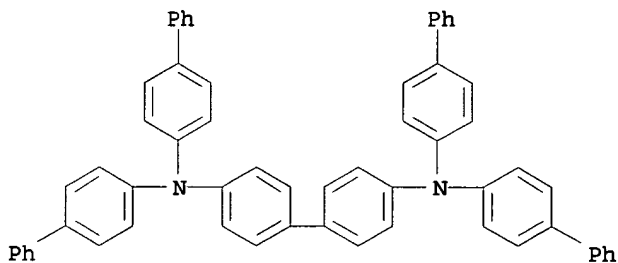
AB The invention relates to an org. electroluminescent (EL) device comprising at least a neg. electrode, a light-emitting layer, a hole injection layer and a pos. electrode sequentially formed on a substrate in this order, where the hole injection layer contains a metal oxide. Examples of such a metal oxide include oxides of group III-XIII metals in the long form periodic table.

IT 164724-35-0

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent device and display)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 74

IT Oxides (inorganic), uses

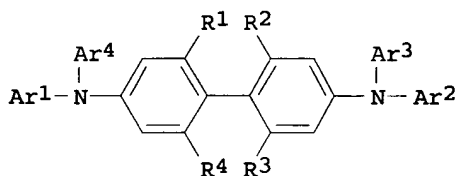
RL: DEV (Device component use); USES (Uses)

(org. electroluminescent device and display)
 IT 1313-27-5, Molybdenum oxide, uses 2085-33-8, Alq3 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses 7440-46-2, Cesium, uses 7789-24-4, Lithium fluoride, uses 50926-11-9, ITO 106604-05-1, Molybdenum oxide (MoO₂-3) 164724-35-0 260550-68-3 312497-12-4
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent device and display)
 IT 462631-35-2
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (org. electroluminescent device and display)
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:735144 HCAPLUS
 DOCUMENT NUMBER: 143:219217
 TITLE: Organic electroluminescent material and organic electroluminescent device by using the same
 INVENTOR(S): Lin, Hsien-Chang
 PATENT ASSIGNEE(S): Ritdisplay Corporation, Taiwan
 SOURCE: U.S. Pat. Appl. Publ., 26 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|------------|
| US 2005175859 | A1 | 20050811 | US 2004-24771 | 20041230 |
| TW 230026 | B1 | 20050321 | TW 2003-92137853 | 20031231 |
| PRIORITY APPLN. INFO.: | | | TW 2003-92137853 | A 20031231 |

OTHER SOURCE(S): MARPAT 143:219217
 GI

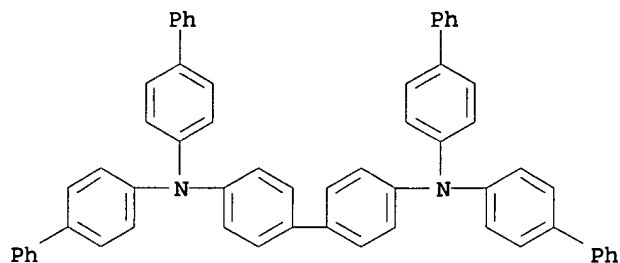


AB The invention refers to an org. electroluminescent material I [R1-4 = H, (un)substituted C1-6 alkyl or C6-40 aryl; Ar1-4 = (un)substituted C6-40 aryl] for a light-emitting layer or a hole-transporting light-emitting layer of an org. electroluminescent device.
 IT 164724-35-0
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent material and org.

electroluminescent device)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

INCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 148896-39-3 164724-35-0 167218-46-4 444716-92-1
862156-57-8RL: DEV (Device component use); USES (Uses)
(org. electroluminescent material and org.
electroluminescent device)

L34 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:76454 HCAPLUS

DOCUMENT NUMBER: 142:165299

TITLE: Organic electroluminescent device and a display using it

INVENTOR(S): Fukuoka, Kenichi; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2005009087 | A1 | 20050127 | WO 2004-JP8456 | 20040616 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG EP 1651011 A1 20060426 EP 2004-745997 20040616 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK | | | | |

PRIORITY APPLN. INFO.:

JP 2003-190630 A

200307
02

WO 2004-JP8456 W

200406
16

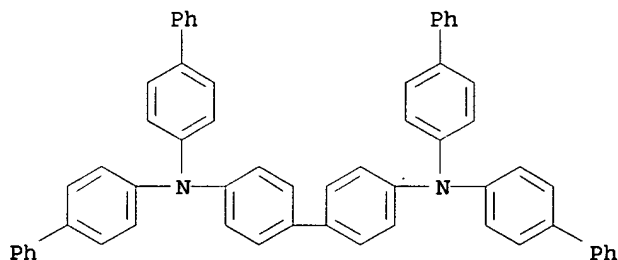
AB An org. electroluminescent device is disclosed which comprises at least two or more light-emitting layers arranged between an anode and a cathode, and an intermediate electrode layer interposed between the light-emitting layers. The intermediate electrode layer is a single layer or a multilayer body composed of multiple layers, and at least one layer of the intermediate electrode layer is made of a semiconductor material having a resistivity of 0.001-10,000 $\Omega \cdot \text{cm}$. This org. electroluminescent device and a display using such an org. electroluminescent device are highly efficient and have long life.

IT 164724-35-0

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent device and display using it)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 74

IT 1313-27-5, Molybdenum oxide (MoO_3), uses 1518-16-7, TCNQ
2085-33-8, Alq3 7439-93-2, Lithium, uses 7440-46-2, Cesium, uses
11098-99-0, Molybdenum oxide 12400-71-4, Cesium telluride (CsTe)
55035-42-2 164724-35-0 172285-83-5 209980-53-0

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent device and display using it)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L34 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:58493 HCAPLUS

DOCUMENT NUMBER: 142:143784

TITLE: White organic electroluminescence device

INVENTOR(S): Matsuura, Masahide; Fukuoka, Kenichi; Yamamoto,
Hiroshi; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 75 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2005006816 | A1 | 20050120 | WO 2004-JP9290 | 20040624 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1651012 | A1 | 20060426 | EP 2004-746759 | 20040624 |
| R: DE, FR, GB | | | | |
| PRIORITY APPLN. INFO.: | | | JP 2003-195472 | A |
| 20030711 | | | | |
| | | | WO 2004-JP9290 | W |
| 20040624 | | | | |

OTHER SOURCE(S): MARPAT 142:143784

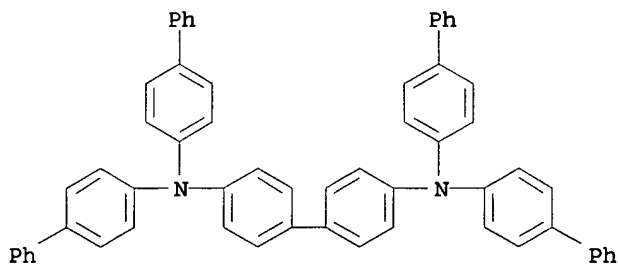
AB A white org. electroluminescence device comprising, between a pair of electrodes, ≥ 2 light-emitting layer and an electron transport layer made of a N-contg. heterocyclic deriv. or a Si-contg. heterocyclic deriv. The energy gap of the host material contained in the light-emitting layers is limited in a specific range, and the energy gap of the N-contg. heterocyclic deriv. or a Si-contg. heterocyclic deriv. contained in the electron transport layer is limited in a specific range. The ionization potential of the N-contg. heterocyclic deriv. or Si-contg. heterocyclic deriv. of the electron transport layer and that of the host material of the light-emitting layer in contact with the electron transport layer satisfy a specific relation. The white org. electroluminescence operates on low voltage at high luminous efficiency, have a long life, and does not change in chromaticity.

IT 164724-35-0

RL: DEV (Device component use); USES (Uses)
(white org. electroluminescent device)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 IT 7440-09-7, Potassium, uses 7440-17-7, Rubidium, uses 7440-23-5, Sodium, uses 7440-24-6, Strontium, uses 7440-39-3, Barium, uses 7440-46-2, Cesium, uses 7440-70-2, Calcium, uses
 RL: DEV (Device component use); USES (Uses)
 (electron injection layer; white org. electroluminescent device)
 IT 154853-83-5 164724-35-0 186412-15-7 209980-53-0 364765-18-4 641143-96-6 824956-63-0
 RL: DEV (Device component use); USES (Uses)
 (white org. electroluminescent device)
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:219325 HCAPLUS

DOCUMENT NUMBER: 140:278196

TITLE: Organic electroluminescent device showing excellent brightness, light-efficiency, and durability

INVENTOR(S): Igarashi, Tatsuya

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | |
| JP 2004087245 | A2 | 20040318 | JP 2002-245297 | 20020826 |
| PRIORITY APPLN. INFO.: | | | | 20020826 |
| | | | | 20020826 |

OTHER SOURCE(S): MARPAT 140:278196

AB The title org. electroluminescent device, suitable as a light source for displays, backlights, etc., contains a compd.(s) represented by R2R3N-m-C6H4[substituted with (R1)n]-Ar (Ar = fused hydrocarbon rings; R1 = substituent; R2, R3 = group contg. fused hydrocarbon rings; n = 0-4) or R2R3N-o-C6H4[substituted with (R1)n]-Ar (Ar = fused hydrocarbon rings; R1 = substituent; R2, R3 = group contg. fused hydrocarbon rings; n = 0-4).

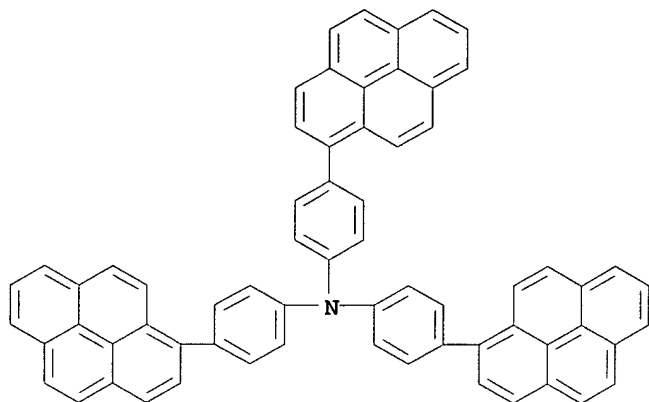
IT 349669-77-8 672294-06-3

RL: DEV (Device component use); USES (Uses)

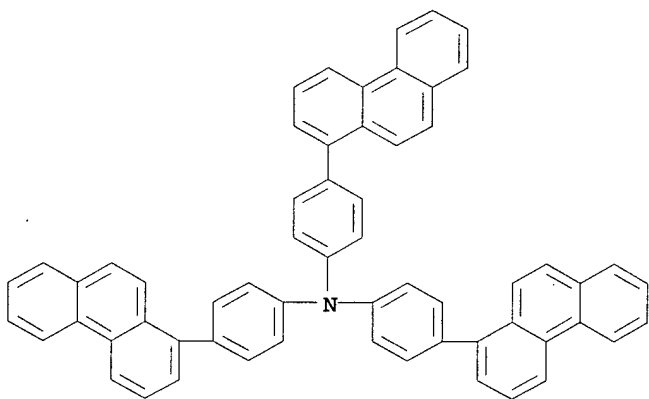
(org. electroluminescent device showing excellent brightness, light-efficiency, and durability)

RN 349669-77-8 HCAPLUS

CN Benzenamine, 4-(1-pyrenyl)-N,N-bis[4-(1-pyrenyl)phenyl]- (9CI) (CA INDEX NAME)



RN 672294-06-3 HCAPLUS
 CN Benzenamine, 4-(1-phenanthrenyl)-N,N-bis[4-(1-phenanthrenyl)phenyl]-
 (9CI) (CA INDEX NAME)



IC ICM H05B033-14
 ICS C09K011-06
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 IT 2085-33-8 151965-47-8 155306-71-1 161001-49-6 200052-70-6
 349669-77-8 489429-55-2 672294-06-3
 672294-07-4 672294-09-6
 RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent device showing excellent
 brightness, light-efficiency, and durability)

L34 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:35584 HCAPLUS
 DOCUMENT NUMBER: 140:102119
 TITLE: Organic electroluminescent device, its display,
 and light emission and displaying methods
 INVENTOR(S): Okada, Hisahiro; Ito, Satoshi; Furusawa, Naoko;
 Suzuki, Takayuki; Hoshino, Hideki
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2004014335 | A2 | 20040115 | JP 2002-167085 | 200206 07 |
| PRIORITY APPLN. INFO.: | | | | 200206 07 |

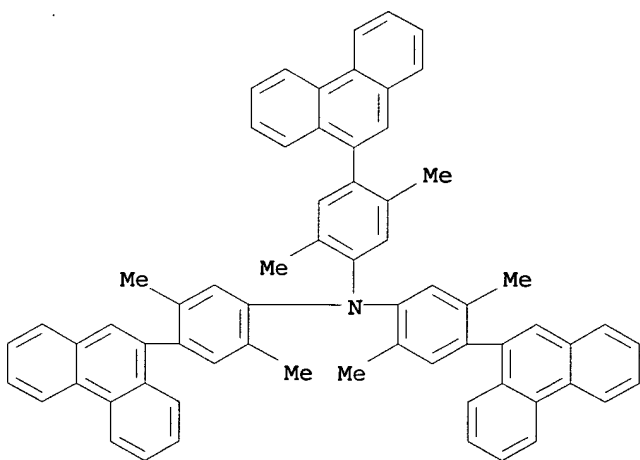
AB The org. EL device has an org. electroluminescent part having an optical micro-resonator (microcavity) structure and emits light in violet (purplish blue or bluish purple) region and a color converter which comprises inorg. phosphors with grain size 0.05-1.0 μm emits visible fluorescent light by absorbing the light from the org. EL part. The inorg. phosphor may contain Ba and Si, Ba and Mg, or K and W, preferably, $\text{Ba}_2\text{-aEuSiO}_4$, $\text{Ba}_{1\text{-aEuMgAl}}\text{10O}_{17}$, or $\text{K}_5\text{Eu}_2.5(\text{WO}_4)_6.25$. The org. EL part may be comprise a transparent substrate/half mirror/luminescent layer-contg. org. compd. thin-film/light reflector laminate. The half mirror part may comprise a dielec. mirror/transparent electrode laminate, the dielec. mirror being on the substrate side. The light reflector may comprise a metal electrode. The color converter may be provided under the dielec. mirror. The dielec. mirror may comprise a laminate of SiO_2 -based layers and TiO_2 -based layers, and preferably, ≥ 1 layer contain Si oxynitride or Ti oxynitride. The substrate may comprise a transparent resin film. The org. EL display has low water vapor permeability and is suitable for a portable appliance.

IT 405173-85-5

RL: DEV (Device component use); USES (Uses)
(luminescent layer; org. electroluminescent
device with optical micro-resonator (microcavity) structure and
its display)

RN 405173-85-5 HCAPLUS

CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS H05B033-02; H05B033-14; H05B033-24

CC 74-13 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)

- Section cross-reference(s): 73
- IT Polysulfones, uses
 RL: DEV (Device component use); USES (Uses)
 (polyether-, substrate, dielec. mirror-laminated; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT Polyethers, uses
 RL: DEV (Device component use); USES (Uses)
 (polysulfone-, substrate, dielec. mirror-laminated; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17)
 22021-54-1
 RL: DEV (Device component use); USES (Uses)
 (Eu-doped, light converter; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 11105-01-4, Silicon oxynitride 37271-26-4, Titanium oxynitride
 RL: DEV (Device component use); USES (Uses)
 (SiON/TiON/SiON mirror laminated on polyether sulfone substrate; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 7631-86-9, Silica, uses 13463-67-7, Titania, uses
 RL: DEV (Device component use); USES (Uses)
 (SiO2/TiO2/SiO2 mirror laminated on polyether sulfone substrate; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant for BaSiO4, light converter; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 4733-39-5
 RL: DEV (Device component use); USES (Uses)
 (electron-transporting layer; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 405171-87-1
 RL: DEV (Device component use); USES (Uses)
 (hole-transporting layer; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 643743-36-6, Europium potassium tungsten oxide (Eu2.5K5W6.25O25)
 RL: DEV (Device component use); USES (Uses)
 (light converter; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 405173-85-5
 RL: DEV (Device component use); USES (Uses)
 (luminescent layer; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)
- IT 25667-42-9, Sumilit FS 1300
 RL: DEV (Device component use); USES (Uses)
 (substrate, SiO2/TiO2/SiO2 mirror-laminated; org. electroluminescent device with optical micro-resonator (microcavity) structure and its display)

L34 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:18753 HCAPLUS

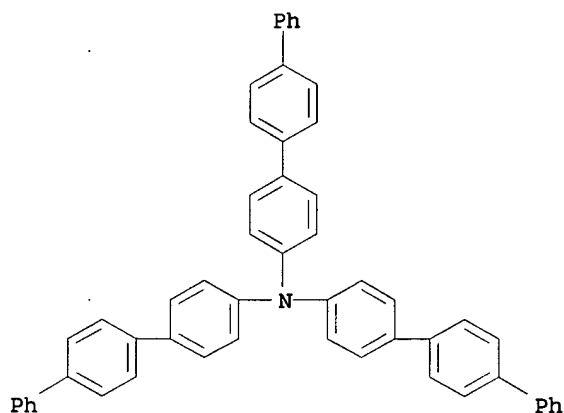
DOCUMENT NUMBER: 138:311438

TITLE: A novel family of boron-containing hole-blocking amorphous molecular materials for blue- and blue-violet-emitting organic electroluminescent devices

AUTHOR(S): Kinoshita, Motoi; Kita, Hiroshi; Shirota, Yasuhiko

CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Engineering, Osaka University, Suita, 565-0871,

SOURCE: Japan
 Advanced Functional Materials (2002), 12(11-12),
 780-786
 CODEN: AFMDC6; ISSN: 1616-301X
 PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A novel family of amorphous mol. materials that function as hole
 blockers in org. electroluminescent (EL) devices,
 tris(2,3,5,6-tetramethylphenyl)borane (TPhB), tris(2,3,5,6-
 tetramethylbiphenyl-4-yl)borane (TBPhB), tris(2,3,5,6-tetramethyl-
 1,1';4',1''-terphenyl-4-yl)borane (TTPhB), and tris[4-(1,1';3',1''-
 terphenyl-5'-yl)-2,3,5,6-tetramethylphenyl]borane (TTPhPhB), have
 been designed and synthesized. They readily form stable amorphous
 glasses with high glass-transition temps., and are characterized by
 reversible cathodic redn. and relatively large HOMO-LUMO energy
 gaps. High-performance blue- and blue-violet-emitting org. EL
 devices have been developed using TBPhB, TTPhB, and TTPhPhB as hole
 blockers and N,N'-di(1-naphthyl)-N,N'-diphenyl[1,1'-biphenyl]-4,4'-
 diamine, tri(p-terphenyl-4-yl)amine, and N,N'-bis(3-methylphenyl)-
 N,N'-diphenyl-[1,1'-biphenyl]-4,4'-diamine as emitters.
 IT 145693-79-4
 RL: DEV (Device component use); USES (Uses)
 (emitter; performance of blue- and blue-violet-emitting
 electroluminescent display devices with borane deriv. as
 hole-blocking amorphous material)
 RN 145693-79-4 HCAPLUS
 CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-
 yl)- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 IT 65181-78-4, N,N'-Bis(3-methylphenyl)-N,N'-diphenyl-[1,1'-biphenyl]-
 4,4'-diamine 123847-85-8 145693-79-4
 RL: DEV (Device component use); USES (Uses)
 (emitter; performance of blue- and blue-violet-emitting
 electroluminescent display devices with borane deriv. as
 hole-blocking amorphous material)
 IT 124729-98-2
 RL: DEV (Device component use); USES (Uses)
 (hole transport; performance of blue- and blue-violet-emitting
 electroluminescent display devices with borane deriv. as
 hole-blocking amorphous material)
 IT 492446-96-5P, Tris(2,3,5,6-tetramethyl-1,1';4',1''-terphenyl-4-
 yl)borane 492446-97-6P 511270-10-3P, Tris(2,3,5,6-
 tetramethylphenyl)borane 511270-11-4P, Tris(2,3,5,6-

tetramethylbiphenyl-4-yl)borane

RL: DEV (Device component use); PRP (Properties); SPN

(Synthetic preparation); PREP (Preparation); USES (Uses)

(hole-blocker; synthesis and properties and display performance of boron-contg. hole-blocking amorphous materials for color org. electroluminescent devices)

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L34 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:963813 HCAPLUS

DOCUMENT NUMBER: 138:30905

TITLE: Organic electroluminescent element and full color display

INVENTOR(S): Oshiyama, Tomohiro; Yamada, Taketoshi; Kinoshita, Motoi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Corporation, Japan

SOURCE: Eur. Pat. Appl., 57 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| EP 1267428 | A2 | 20021218 | EP 2002-254090 | 20020612 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2003091860 | A1 | 20030515 | US 2002-167120 | 20020610 |
| US 6855438 | B2 | 20050215 | | |
| JP 2003064355 | A2 | 20030305 | JP 2002-171356 | 20020612 |
| US 2005048319 | A1 | 20050303 | US 2004-960999 | 20041007 |
| PRIORITY APPLN. INFO.: | | | JP 2001-181543 | A |
| | | | US 2002-167120 | A3 |
| | | | | 20020610 |

AB Org. electroluminescent elements are described which comprise a light-emitting layer contg. a fluorescent compd. and a phosphorescent compd., the fluorescent compd. having a nitrogen atom no. to carbon atom no. ratio in the mol. (N/C) of 0-0.05 and for which the max. emission wavelength of light emitted according to electroluminescence of the element is longer than the max. fluorescence wavelength of the fluorescent compd. Displays employing the elements are also described.

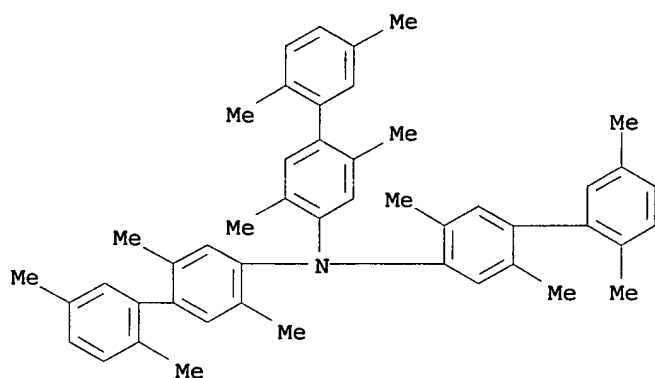
IT 405171-49-5 405172-39-6 405173-85-5
478262-73-6 478262-74-7

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent elements using mixed fluorescent and phosphorescent materials and displays employing them)

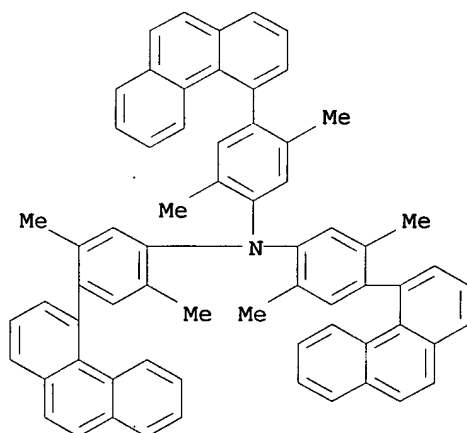
RN 405171-49-5 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 2,2',5,5'-tetramethyl-N,N-bis(2,2',5,5'-tetramethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



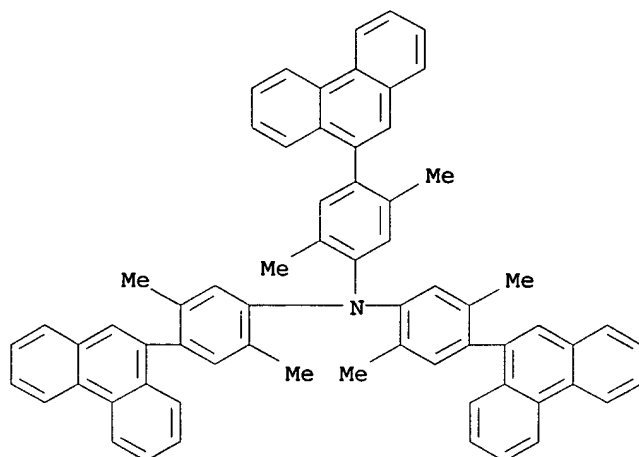
RN 405172-39-6 HCAPLUS

CN Benzenamine, N,N-bis[2,5-dimethyl-4-(4-phenanthrenyl)phenyl]-2,5-dimethyl-4-(4-phenanthrenyl)- (9CI) (CA INDEX NAME)

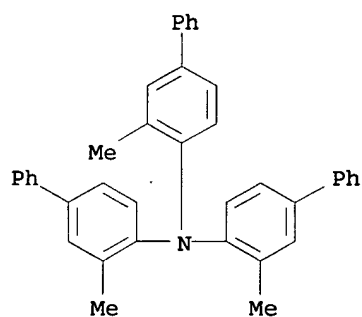


RN 405173-85-5 HCAPLUS

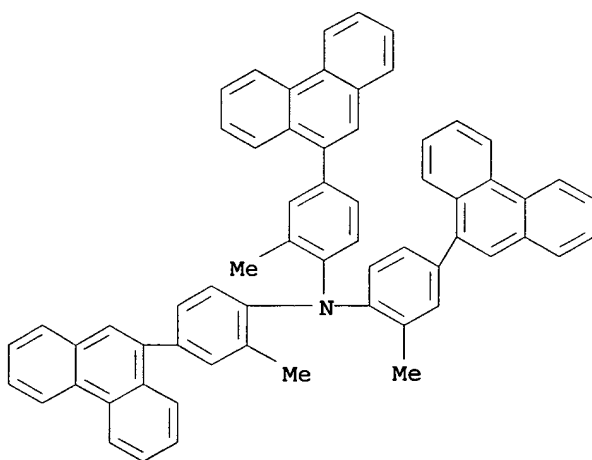
CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



RN 478262-73-6 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 3-methyl-N,N-bis(3-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 478262-74-7 HCAPLUS
 CN Benzenamine, 2-methyl-N,N-bis[2-methyl-4-(9-phenanthrenyl)phenyl]-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



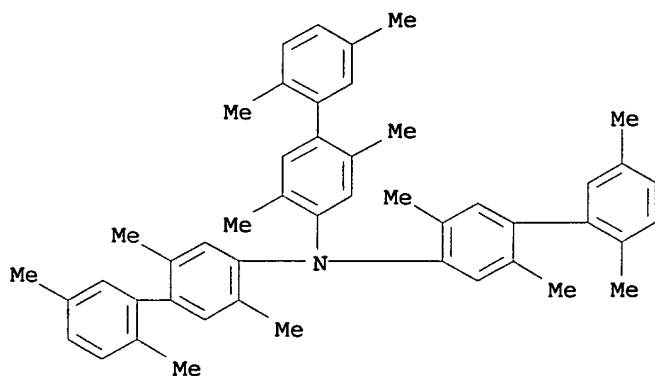
IC ICM H01L051-20

ICS H01L027-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76
IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5, Bathocuproin 7429-90-5, Aluminum, uses 7440-04-2D, Osmium, compds. 7789-24-4, Lithium fluoride, uses 31248-39-2 37271-44-6 50926-11-9, ITO 51325-95-2, DCM2 65181-79-5 94928-86-6 123847-85-8, α -NPD 149005-33-4 337526-85-9 337526-98-4 343978-78-9 343978-79-0 400654-08-2 405171-49-5 405172-39-6 405173-85-5 453590-51-7 478262-73-6 478262-74-7 478262-75-8 478262-76-9 478262-77-0 478262-78-1 478262-79-2 478262-80-5
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent elements using mixed fluorescent and phosphorescent materials and displays employing them)

L34 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:867322 HCAPLUS
DOCUMENT NUMBER: 137:377521
TITLE: Organic electroluminescent device with high emission efficiency and long service life, and its display device
INVENTOR(S): Matsuura, Mitsunobu; Oshiyama, Tomohiro; Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi
PATENT ASSIGNEE(S): Konica Co., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

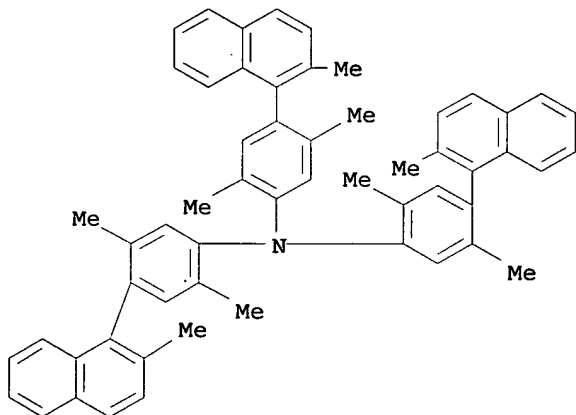
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | |
| JP 2002329577 | A2 | 20021115 | JP 2001-131667 | 20010427 |
| PRIORITY APPLN. INFO.: | | | JP 2001-131667 | 20010427 |

OTHER SOURCE(S): MARPAT 137:377521
AB The electroluminescent (EL) device has a light-emitting layer contg. an org. compd. with band gap 2.96-3.80 eV and mol. wt. 600-2000 and a phosphor. The display has (A) the above EL device or (B) a conversion layer for absorption of the emission of the above EL device and emission with different max. wavelength. The use of ≥ 2 EL devices or conversion layers with different max. emission wavelength enables full-color display devices. The display device shows low elec. power consumption because of high emission efficiency to improve service life.
IT 405171-49-5 405171-50-8 405171-53-1 405171-54-2 405173-85-5
RL: DEV (Device component use); USES (Uses)
(light-emitting layer contg.; org. electroluminescent device with high emission efficiency and long service life for full-color display device)
RN 405171-49-5 HCAPLUS
CN [1,1'-Biphenyl]-4-amine, 2,2',5,5'-tetramethyl-N,N-bis(2,2',5,5'-tetramethyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



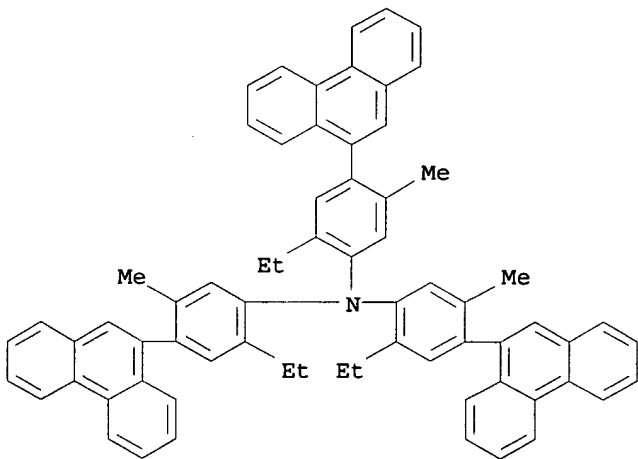
RN 405171-50-8 HCAPLUS

CN Benzenamine, N,N-bis[2,5-dimethyl-4-(2-methyl-1-naphthalenyl)phenyl]-2,5-dimethyl-4-(2-methyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



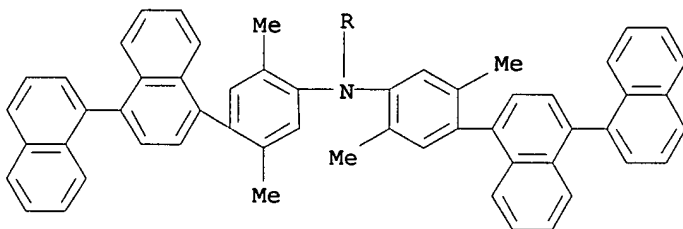
RN 405171-53-1 HCAPLUS

CN Benzenamine, 2-ethyl-N,N-bis[2-ethyl-5-methyl-4-(9-phenanthrenyl)phenyl]-5-methyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)

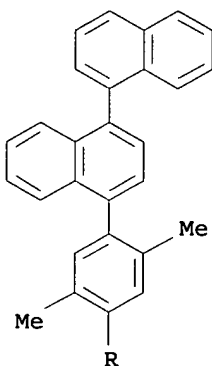


RN 405171-54-2 HCAPLUS
CN Benzenamine, 4-[1,1'-binaphthalen]-4-yl-N,N-bis(4-[1,1'-binaphthalen]-4-yl-2,5-dimethylphenyl)-2,5-dimethyl- (9CI) (CA INDEX NAME)

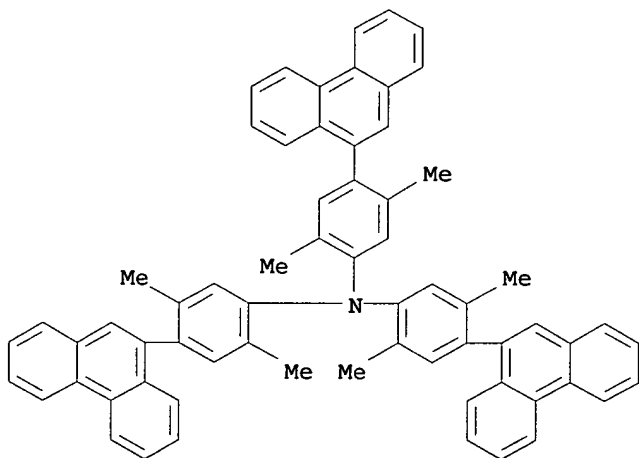
PAGE 1-A



PAGE 2-A



RN 405173-85-5 HCAPLUS
CN Benzenamine, N,N-bis[2,5-dimethyl-4-(9-phenanthrenyl)phenyl]-2,5-dimethyl-4-(9-phenanthrenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12; H05B033-22
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 IT 7789-24-4, Lithium fluoride, uses
 RL: **DEV (Device component use); USES (Uses)**
 (cathode buffer layer; org. electroluminescent device with high
 emission efficiency and long service life for full-color display
 device)
 IT 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17)
 13778-49-9
 RL: **DEV (Device component use); USES (Uses)**
 (color conversion filter contg.; org. electroluminescent device
 with high emission efficiency and long service life for
 full-color display device)
 IT 405171-47-3 405171-49-5 405171-50-8
 405171-53-1 405171-54-2 405171-87-1
 405172-07-8 405172-16-9 405173-85-5 426267-90-5
 426267-91-6 426267-92-7 475057-09-1
 RL: **DEV (Device component use); USES (Uses)**
 (light-emitting layer contg.; org. electroluminescent
 device with high emission efficiency and long service life for
 full-color display device)
 IT 19205-19-7 51325-95-2 144810-07-1
 RL: **DEV (Device component use); USES (Uses)**
 (phosphor, light-emitting layer contg.; org. electroluminescent
 device with high emission efficiency and long service life for
 full-color display device)

L34 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:754337 HCAPLUS
 DOCUMENT NUMBER: 137:262855
 TITLE: Method for producing aromatic amino compound by
 arylation reaction of amines with aryl halides
 promoted by noble metals
 INVENTOR(S): Iwakuma, Toshihiro; Moriwaki, Fumio
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 30 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|---------------|-----------------|--------------|
| WO 2002076922 | A1 | 20021003 | WO 2002-JP2132 | 200203 07 |
| W: CN, IN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| CN 1501908 | A | 20040602 | CN 2002-806614 | 200203 07 |
| US 2004082813 | A1 | 20040429 | US 2003-469702 | 200309 12 |
| US 2006030736 | A1 | 20060209 | US 2005-239116 | 200509 30 |
| PRIORITY APPLN. INFO.: | | JP 2001-76302 | A | 200103 16 |

WO 2002-JP2132

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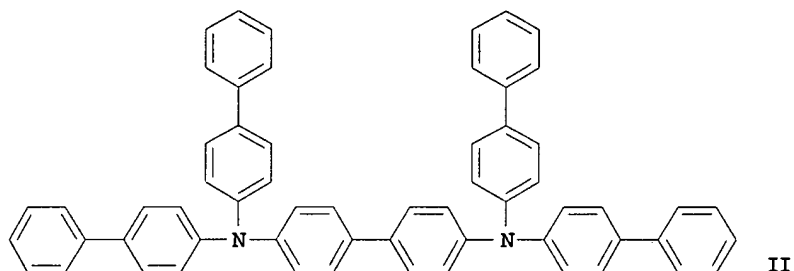
200203
07

US 2003-469702

A1

200309
12OTHER SOURCE(S):
GI

CASREACT 137:262855; MARPAT 137:262855



AB Claimed is a method for producing an arom. amino compd. represented by the general formula Ar1-N(Ar2)-H (wherein Ar1 and Ar2 are each a substituted or non-substituted hydrocarbon group having 2 to 50 carbon atoms or a heterocyclic group), which comprises reacting an amino compd. represented by the general formula H2N-R1 (wherein R1 is a substituent having 2 to 50 carbon atoms) with an aryl halide mixt. represented by the general formula Ar1-X and Ar2-X (wherein Ar1 and Ar2 are as defined above and X is a halogen) in the presence of a noble metal catalyst, to synthesize an arom. amino compd. intermediate represented by the general formula Ar1-N(Ar1)-R1, and removing the substituent R1 of this compd. The method can be employed for producing an arom. amino compd. in high yield with good efficiency, without the use of a highly toxic raw material such as β -naphthylamine, 4-aminodiphenyl, or benzidine which is designated as a special chem. and whose prodn. is banned in Japan. Arom. amino compds. are useful as elec. charge transporting materials for electrophotog. photoreceptors and org. electroluminescence devices. Thus, 60 mL dry toluene, 2.04 mmol benzylamine, and a toluene soln. of tris(tert-butyl)phosphine (2.22 M, 169 μ L, 0.374 mmol) were added to 10.0 g 4-bromobiphenyl, 4.32 g potassium tert-butoxide, and 42.0 mg Pd(OAc)₂ under Ar and stirred at room temp. for 15 min and 120° for 7.5 h to give 87% N,N-di(4-biphenyl)benzylamine which (1.35 g) was hydrogenolyzed over 135 mg 10% Pd-C in a mixt. of 100 mL CHCl₃ and 20 mL ethanol under vigorous stirring at room temp. for 30 h to give 94% di(4-biphenyl)amine (I). Dry toluene (10 mL) and a toluene soln. of tris(tert-butyl)phosphine (2.22 M, 13.4 μ L, 0.0296 mmol) were added to 500 mg I, 231 mg 4,4'-dibromobiphenyl, 157 mg potassium tert-butoxide, and 3.4 mg Pd(OAc)₂ under Ar and gradually heated to 115° with stirring and stirred at 115° for 6 h to give 77% N,N,N',N'-tetra(4-biphenyl)benzidine (II).

IT 164724-35-0P

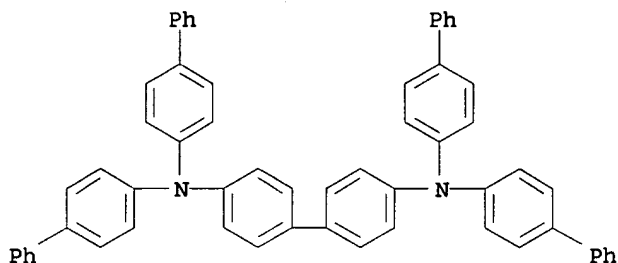
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(method for producing arom. amino compds. as elec. charge transporting materials for electrophotog. photoreceptors and org. electroluminescence devices)

RN 164724-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-

yl)- (9CI) (CA INDEX NAME)



IC ICM C07C209-10
ICS C07C209-62; C07C211-54; C07C211-58

CC 25-24 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 74, 76

IT Amines, preparation
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(arom.; method for producing arom. amino compds. by arylation reaction of amines with aryl halides promoted by noble metals and N-deprotection)

IT Amines, preparation
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(diamines, arom.; method for producing arom. amino compds. by arylation reaction of amines with aryl halides promoted by noble metals and N-deprotection)

IT Noble metals
RL: CAT (Catalyst use); USES (Uses)
(method for producing arom. amino compds. as elec. charge transporting materials for electrophotog. photoreceptors and org. electroluminescence devices)

IT 3375-31-3 13716-12-6, Tris-tert-butylphosphine 51364-51-3, Tris(dibenzylideneacetone) dipalladium 76189-56-5, (S)-BINAP
RL: CAT (Catalyst use); USES (Uses)
(method for producing arom. amino compds. as elec. charge transporting materials for electrophotog. photoreceptors and org. electroluminescence devices)

IT 164724-35-0P 462631-35-2P 462631-36-3P
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for producing arom. amino compds. as elec. charge transporting materials for electrophotog. photoreceptors and org. electroluminescence devices)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:674604 HCAPLUS

DOCUMENT NUMBER: 137:208193

TITLE: Organic electroluminescent device and display unit

INVENTOR(S): Ueda, Naoyuki; Takada, Ichinori; Shibamura, Tetsuo; Ichimura, Mari; Tamura, Shinichiro

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|---------------|
| US 2002122900 | A1 | 20020905 | US 2002-68353 | 20020206 |
| US 6916552 | B2 | 20050712 | | |
| JP 2002313579 | A2 | 20021025 | JP 2002-6851 | 20020116 |
| JP 3669333 | B2 | 20050706 | | |
| PRIORITY APPLN. INFO.: | | | JP 2001-29533 | A 20010206 |
| | | | JP 2002-6851 | A 20020116 |

OTHER SOURCE(S): MARPAT 137:208193

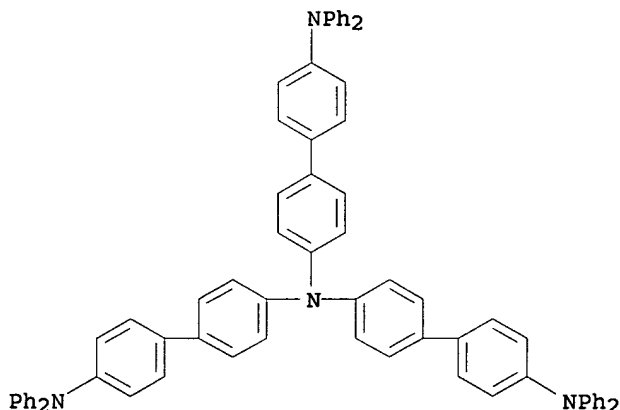
AB Org. electroluminescent devices comprising at least a hole transportation layer and a luminescent layer held between an anode and a cathode are described in which the luminescent layer comprises a spiro compd. represented by the general formula 2,2',7,7'-tetrakis(Ar)-9,9'-spirobifluorene; and the hole transportation layer comprises a triphenylamine tetramer represented by the general formulas (R21-C6H4)(R22-C6H4)N(p-C6H4)2N(R23-C6H4)(p-C6H4)2(R24-C6H4)N(p-C6H4)2N(R25-C6H4)(R26-C6H4) or [(R31-C6H4)(R32-C6H4)N(p-C6H4)2]3N (Ar = independently selected a biphenyl, substituted biphenyl, naphthyl, substituted naphthyl, anthryl, or substituted anthryl groups; and R21-26 and R31-32 = independently selected H, C1-12 alkyl, cycloalkyl, C5-a8 aryl, or substituted aryl groups). Displays employing the devices are also described.

IT 128396-99-6

RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent devices using spiro compd.-based luminescent layers and triphenylamine tetramer-based hole-transport layers and displays using them)

RN 128396-99-6 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM G02F001-1335
ICS G11C013-00; H05B033-00
INCL 428001100
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 25, 74, 76
IT Spiro compounds
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent devices using spiro compd.-based luminescent layers and triphenylamine tetramer-based hole-transport layers and displays using them)
IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 37271-44-6
128396-99-6 167218-46-4 171408-93-8 185690-41-9,
4,4',4''-Tris(2-naphthylphenylamino)triphenylamine 454182-25-3
454182-26-4 454182-27-5 454182-28-6 454182-29-7
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent devices using spiro compd.-based luminescent layers and triphenylamine tetramer-based hole-transport layers and displays using them)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:823340 HCAPLUS
DOCUMENT NUMBER: 135:364614
TITLE: Triphenylamine, carbazole, or triphenylbenzene derivatives and electroluminescent devices using them
INVENTOR(S): Shiota, Yasuhiko
PATENT ASSIGNEE(S): Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------------------|------|----------|-----------------|------------|
| JP 2001316338 | A2 | 20011113 | JP 2000-71723 | 20000315 |
| PRIORITY APPLN. INFO.: | | | JP 2000-51209 | A 20000228 |
| OTHER SOURCE(S): MARPAT 135:364614 | | | | |
| GI | | | | |

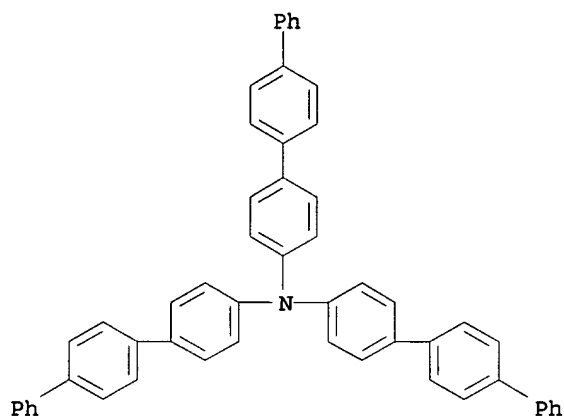
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Triphenylamine derivs. I (R1, R2 = substituent), carbazole derivs. II (R1, R2 = substituent), and triphenylbenzene derivs. III (R1, R2 = substituent) are claimed. Also claimed are electroluminescent devices having a hole injection layer contg. I, II, or III. The electroluminescent devices show high luminescence intensity, high luminescence efficiency, and high heat resistance.
IT 145693-79-4 198639-41-7, Tri(o-terphenyl-4-yl)amine 372190-65-3 372190-66-4
RL: DEV (Device component use); USES (Uses)
(triphenylamine, carbazole, or triphenylbenzene derivs. for hole

injection layer of heat-resistant electroluminescent devices)

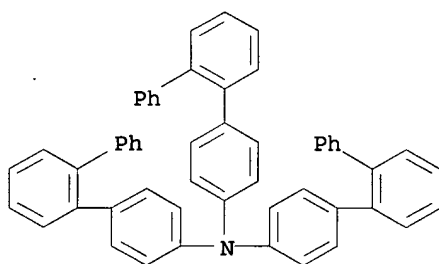
RN 145693-79-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



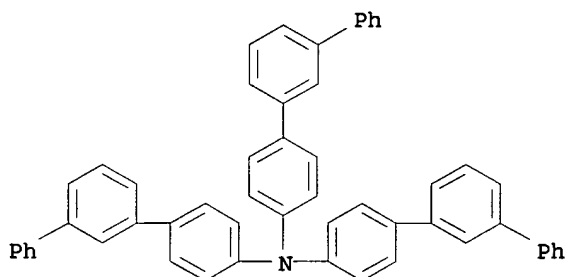
RN 198639-41-7 HCAPLUS

CN [1,1':2',1''-Terphenyl]-4-amine, N,N-bis([1,1':2',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



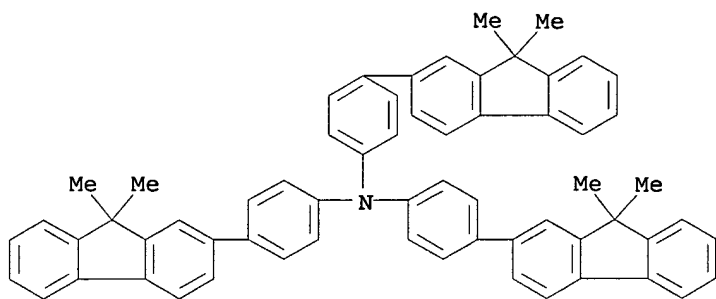
RN 372190-65-3 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4-amine, N,N-bis([1,1':3',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 372190-66-4 HCAPLUS

CN Benzenamine, 4-(9,9-dimethyl-9H-fluoren-2-yl)-N,N-bis[4-(9,9-dimethyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C07C211-54
ICS C07C211-61; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 25

IT 148044-16-0, 1,3,5-Tris(4-tert-butylphenyl-1,3,4-oxadiazolyl)benzene
RL: **DEV (Device component use); USES (Uses)**
(electron transport layer; triphenylamine, carbazole, or
triphenylbenzene derivs. for hole injection layer of
heat-resistant electroluminescent devices)

IT 2085-33-8, Tris(8-quinolinolato)aluminum
RL: **DEV (Device component use); USES (Uses)**
(luminescent layer; triphenylamine, carbazole, or
triphenylbenzene derivs. for hole injection layer of
heat-resistant electroluminescent devices)

IT 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-
4,4'-diamine 123847-85-8 134008-76-7 144726-87-4
145693-79-4 153521-90-5, 1,3,5-Tris[N-(4-
diphenylaminophenyl)phenylamino]benzene 169224-62-8
198639-41-7, Tri(o-terphenyl-4-yl)amine 372190-64-2
372190-65-3 372190-66-4
RL: **DEV (Device component use); USES (Uses)**
(triphenylamine, carbazole, or triphenylbenzene derivs. for hole
injection layer of heat-resistant electroluminescent
devices)

L34 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:626018 HCAPLUS

DOCUMENT NUMBER: 135:187696

TITLE: Electroluminescent device containing new
electron transport substance for improving
luminescent properties, heat-resistance, and
durability

INVENTOR(S): Shirota, Yasuhiko

PATENT ASSIGNEE(S): Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | ----- |
| JP 2001233882 | A2 | 20010828 | JP 2000-51210 | 200002 28 |

PRIORITY APPLN. INFO.: JP 2000-51210

200002
28

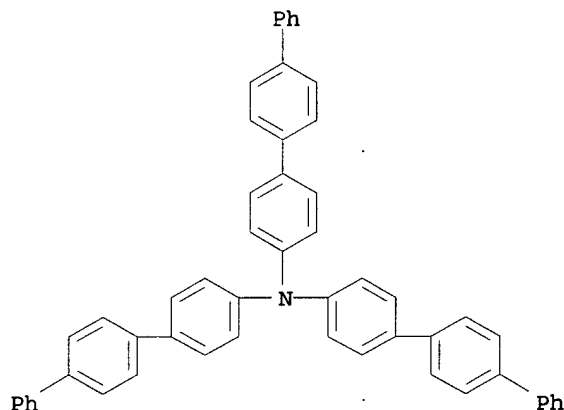
AB The invention relates to an electroluminescent display device which contains 1,3,5-tris[5-(dimethylboryl)-2-thienyl]benzene in an electron transport layer. The electroluminescent display device contains tris(p-terphenyl-4-yl)amine in a luminescent layer. The electroluminescent display device contains an org. compd. selected from 4,4',4''-tris(3-methylphenylphenylamino)triphenylamine, 4,4',4''-tris(1-naphthylphenylamino)triphenylamine, 4,4',4''-tris(2-naphthylphenylamino)triphenylamine, 4,4',4''-tris[biphenyl-2-yl(phenyl)amino]triphenylamine, 4,4',4''-tris[biphenyl-3-yl(phenyl)amino]triphenylamine, 4,4',4''-tris[biphenyl-4-yl(3-methylphenyl)amino]triphenylamine, and 4,4',4''-tris[9,9-dimethyl-2-fluorenyl(phenyl)amino]triphenylamine in a pos. hole injection layer. The electroluminescent device is suitable for blue- and full color-flat panel displays.

IT 145693-79-4P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
(in luminescent layer; electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)

RN 145693-79-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM C07F005-02

ICS C07C211-54; C07D221-18; C09K011-06; H05B033-14; H05B033-22

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 355832-02-9P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
(electron transport substance in electroluminescent device with improved luminescent properties, heat-resistance, and durability)

IT 145693-79-4P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)

(in luminescent layer; electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)

IT 124729-98-2P, 4,4',4''-Tris(3-methylphenylphenylamino)triphenylamine

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP

(Preparation); PROC (Process); **USES (Uses)**
 (in pos. hole injection layer; electroluminescent device contg.
 new electron transport substance for improving luminescent
 properties, heat-resistance, and durability)

IT 185690-39-5P 185690-41-9P, 4,4',4''-Tris(2-
 naphthylphenylamino)triphenylamine 214545-00-3P 281678-62-4P
 281678-63-5P 303111-06-0P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered
 material use); PREP (Preparation); **USES (Uses)**
 (prepn. of compd. useful for pos. hole injection layer of
 electroluminescent device)

L34 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:505799 HCAPLUS

DOCUMENT NUMBER: 135:242261

TITLE: 1,3-Bis[5-(dimesitylboryl)thiophen-2-yl]benzene
 and 1,3,5-tris[5-(dimesitylboryl)thiophen-2-
 yl]benzene as a novel family of
 electron-transporting hole blockers for organic
 electroluminescent devices

AUTHOR(S): Kinoshita, Motoi; Shirota, Yasuhiko

CORPORATE SOURCE: Department of Applied Chemistry, Faculty of
 Engineering, Osaka University, Suita, 565-0871,
 Japan

SOURCE: Chemistry Letters (2001), (7), 614-615

CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 135:242261

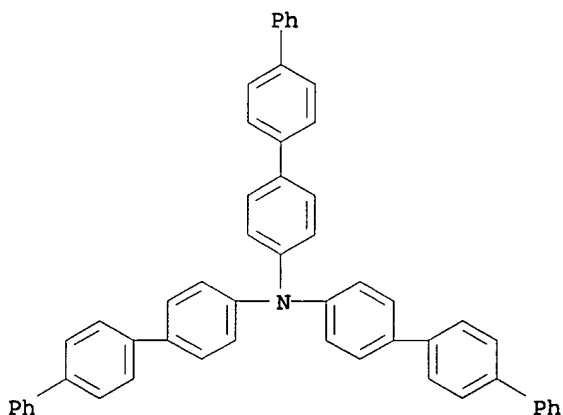
AB A novel family of electron-transporting hole blockers,
 1,3-bis[5-(dimesitylboryl)thiophen-2-yl]benzene and
 1,3,5-tris[5-(dimesitylboryl)thiophen-2-yl]benzene (TMB-TB), were
 designed and synthesized. They exhibit multiple redox behavior in
 electrochem. redn. and to readily form stable amorphous glasses with
 high glass-transition temps. >100°. TMB-TB was proven to
 function well as a hole blocker in blue-emitting org.
 electroluminescent devices.

IT 145693-79-4

RL: **DEV (Device component use)**; PEP (Physical, engineering
 or chemical process); PROC (Process); **USES (Uses)**
 (blue emitter in blue-emitting org. electroluminescent
 device)

RN 145693-79-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4-amine, N,N-bis([1,1':4',1''-terphenyl]-4-
 yl)- (9CI) (CA INDEX NAME)



CC 29-4 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 72, 73, 74

IT 145693-79-4
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (blue emitter in blue-emitting org. electroluminescent device)

IT 2085-33-8, Tris(8-quinolinolato)aluminum
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (electron transporter in org. electroluminescent devices)

IT 124729-98-2
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (hole transporter in blue-emitting org. electroluminescent device)

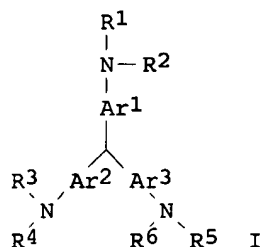
IT 355832-02-9P
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)
 (prepn., electrochem. redox, electroluminescence, glass-transition properties and use as electron-transporting hole blocker in org. electroluminescent devices)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:670067 HCAPLUS
 DOCUMENT NUMBER: 131:294207
 TITLE: Hole-transporting material and use thereof
 INVENTOR(S): Tamano, Michiko; Okutsu, Satoshi; Enokida, Toshio
 PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan
 SOURCE: U.S., 22 pp., Cont.-in-part of U.S. Ser. No. 762,921, abandoned.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| US 5968675 | A | 19991019 | US 1998-85251 | 19980528 |
| JP 09222741 | A2 | 19970826 | JP 1996-306049 | 19961118 |
| PRIORITY APPLN. INFO.: | | | JP 1995-321345 | A 19951211 |
| | | | JP 1996-306049 | A 19961118 |
| | | | US 1996-762921 | B2 19961210 |

OTHER SOURCE(S): MARPAT 131:294207
 GI



AB Hole-transporting materials are described by the general formula I (R1-6 = independently selected (un)substituted aryl groups, ≥ 1 of which is an aryl group having a cycloalkyl ring or ≥ 1 of which comprises fused arom. rings having ≥ 3 fused rings; and each of Ar1-3 = independently selected (un)substituted arylene groups). Org. electroluminescent devices and electrophotog. photoreceptors employing the materials are also described.

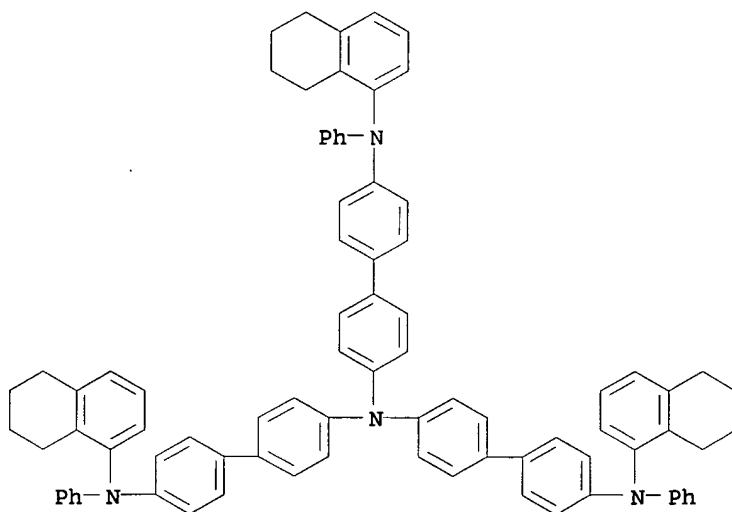
IT 192181-14-9

RL: DEV (Device component use); USES (Uses)

(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

RN 192181-14-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-phenyl-N',N'-bis[4'-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino][1,1'-biphenyl]-4-yl]-N-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

INCL 428690000

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 73, 74

IT Polyvinyl butyrals

RL: DEV (Device component use); USES (Uses)

(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog.

photoreceptors)

IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-hydroxyquinoline)aluminum 28259-80-5, Dibromoanthanthrone 37337-82-9, Vylon 200 83749-52-4 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 179550-45-9 188049-36-7 192180-93-1 192180-96-4 192181-01-4 192181-02-5 192181-04-7 192181-05-8 192181-06-9 192181-09-2 192181-10-5 192181-12-7 192181-14-9 192181-16-1 192181-18-3 246874-93-1 246874-94-2 246874-95-3 246874-96-4 246874-97-5 246874-98-6

RL: DEV (Device component use); USES (Uses)
(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

IT 192181-03-6P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

IT 246874-92-0P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:659111 HCAPLUS

DOCUMENT NUMBER: 131:293116

TITLE: Electroluminescent devices comprising a tertiary amine, alcohol-soluble Alq3 derivatives or mixtures, and polymeric binders

INVENTOR(S): Koch, Friedrich; Heuer, Helmut Werner; Wehrmann, Rolf; Deussen, Martin; Elschner, Andreas

PATENT ASSIGNEE(S): Bayer A.-G., Germany

SOURCE: Eur. Pat. Appl., 78 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|----------|
| EP 949312 | A1 | 19991013 | EP 1999-104697 | 19990310 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| DE 19812259 | A1 | 19991021 | DE 1998-19812259 | 19980320 |
| JP 11317291 | A2 | 19991116 | JP 1999-68575 | 19990315 |
| CA 2266000 | AA | 19990920 | CA 1999-2266000 | 19990317 |
| US 6277504 | B1 | 20010821 | US 1999-272983 | 19990320 |

PRIORITY APPLN. INFO.:

DE 1998-19812259 A

199803
20

OTHER SOURCE(S): MARPAT 131:293116

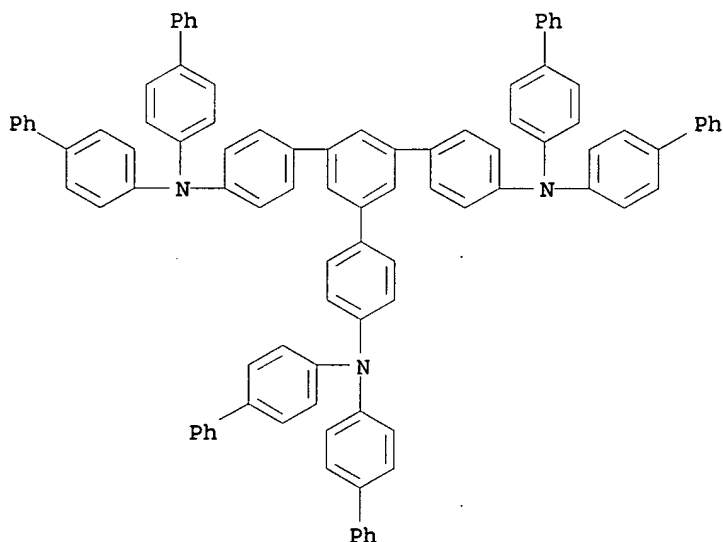
AB Electroluminescent devices are described in which a 1,3,5-tris(aminophenyl)benzene deriv. is included in hole injection and/or hole transport zones and a complex of 8-hydroxyquinoline or its derivs. is contained in the electroluminescent region. The devices may also employ a transparent polymeric binder. Use of the devices in displays or for information recording is also described.

IT 244227-88-1

RL: DEV (Device component use); USES (Uses)
(electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

RN 244227-88-1 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4,4''-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)-5'-[4-[bis([1,1'-biphenyl]-4-yl)amino]phenyl]- (9CI)
(CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT Rare earth compounds

RL: DEV (Device component use); USES (Uses)

(complexes with hydroxyquinoline derivs.; electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

IT Phenoxy resins

Polycarbonates, uses

Polyolefins

Polysulfones, uses

RL: DEV (Device component use); USES (Uses)

(electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

IT Polyesters, uses

Polyesters, uses

RL: DEV (Device component use); USES (Uses)

(polycarbonate-; electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

IT Polycarbonates, uses

Polycarbonates, uses

RL: DEV (Device component use); USES (Uses)

(polyester-; electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

IT 7439-95-4D, Magnesium, compds. with hydroxyquinoline derivs., uses

7440-23-5D, Sodium, compds. with hydroxyquinoline derivs., uses

7440-70-2D, Calcium, compds. with hydroxyquinoline derivs., uses

7440-74-6D, Indium, compds. with hydroxyquinoline derivs., uses

9003-54-7, Acrylonitrile-styrene copolymer 25067-59-8,

Polyvinylcarbazole 25085-34-1 128366-29-0 128366-30-3

128366-31-4 128366-32-5 128366-33-6 128366-35-8 128366-37-0

142894-36-8 142894-37-9 142894-38-0 142894-39-1 147951-36-8

147951-37-9 147951-38-0 201870-09-9 201870-12-4 201870-14-6

201870-15-7 201870-17-9 201870-18-0 201870-19-1 201870-20-4

201870-21-5 201870-22-6 201870-23-7 201870-24-8 201870-25-9

201870-26-0 201870-27-1 201870-28-2 201870-29-3 201870-30-6

201870-31-7 201870-32-8 244227-88-1 244227-89-2

246531-44-2 246539-22-0 246539-23-1 246539-24-2 246539-25-3

246539-26-4 246539-27-5 246539-28-6 246539-29-7 246539-30-0

246539-31-1 246539-32-2 246539-33-3 246539-34-4 246539-35-5

246539-36-6 246539-37-7 246539-38-8 246539-39-9 246539-40-2

246539-41-3 246539-42-4 246539-43-5 246539-44-6 246539-45-7

246539-46-8 246539-47-9

RL: DEV (Device component use); USES (Uses)

(electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

IT 103773-74-6P 246539-20-8P 246539-21-9P

RL: DEV (Device component use); SPN (Synthetic

preparation); PREP (Preparation); USES (Uses)

(electroluminescent devices comprising tri(aminophenyl)benzene deriv.-based hole injection and/or hole transport zones and hydroxyquinoline deriv. complex-based emitting regions)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:282192 HCAPLUS

DOCUMENT NUMBER: 130:289288

TITLE: Amine for organic electroluminescent device

INVENTOR(S): Uchida, Manabu; Izumizawa, Takenori; Furukawa, Kenji

PATENT ASSIGNEE(S): Chisso Corporation, Japan

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

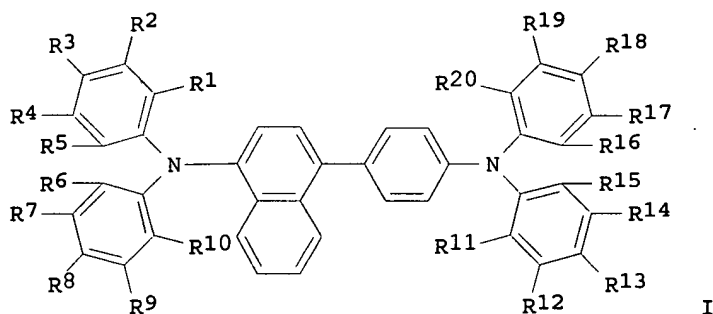
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|--------|
| WO 9920596 | A1 | 19990429 | WO 1998-JP4730 | 199810 |

W: KR, US
RW: DE, FR, GB
JP 11124358 A2 19990511 JP 1997-304988
EP 1043305 A1 20001011 EP 1998-947946
EP 1043305 B1 20030730
R: DE, FR, GB
US 6485847 B1 20021126 US 2000-529851
PRIORITY APPLN. INFO.: JP 1997-304988 A
WO 1998-JP4730 W
200006
26
199710
20
199810
20
199710
20
199810
20

OTHER SOURCE(S): MARPAT 130:289288
GI



AB An org. electroluminescent device having high efficiency and long lifetime contains an amine represented by the formula I as a hole-transporting agent or a luminescent material, wherein R1 to R20 are each independently hydrogen, halogen, C1-6 alkyl, C1-6 alkoxy, (substituted) amino, (substituted) aryl, or (substituted) heterocyclyl, provided that the (substituted) aryl or the (substituted) heterocyclyl may have a fused structure.

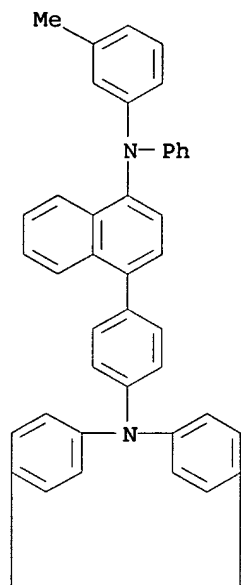
IT 222962-68-7P

RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. and use as luminescent material for electroluminescent devices)

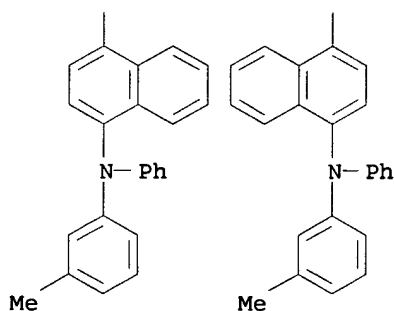
RN 222962-68-7 HCAPLUS

CN 1-Naphthalenamine, 4,4',4''-(nitrilotri-4,1-phenylene)tris[N-(3-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07C211-54
 ICS C07C211-57; C07D213-38; H05B033-14; H05B033-22; G03G005-06
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 25
 IT Amines, uses
 RL: **DEV (Device component use)**; TEM (Technical or
 engineered material use); **USES (Uses)**
 (arom.; org. electroluminescent devices contg.)
 IT 222962-66-5P 222962-67-6P **222962-68-7P**
 RL: **DEV (Device component use)**; SPN (Synthetic
 preparation); TEM (Technical or engineered material use); PREP
 (Preparation); **USES (Uses)**
 (prepn. and use as **luminescent** material for
electroluminescent devices)
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L34 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:398346 HCAPLUS

Ross Shipe EIC 1700 Remsen 4B31 571/272-6018

DOCUMENT NUMBER: 129:87816
 TITLE: Material for organoelectroluminescence device
 and organoelectroluminescence device using the
 material
 INVENTOR(S): Tamano, Michiko; Onikubo, Toshikazu; Okutsu,
 Satoshi; Enokida, Toshio
 PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan
 SOURCE: Eur. Pat. Appl., 26 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|-------------------|
| EP 848579 | A2 | 19980617 | EP 1997-310157 | 199712 16 |
| EP 848579 | A3 | 19980902 | | |
| EP 848579 | B1 | 20030326 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| JP 10233287 | A2 | 19980902 | JP 1997-301457 | 199711 04 |
| JP 3606025 | B2 | 20050105 | | |
| US 5948941 | A | 19990907 | US 1997-990193 | 199712 12 |
| PRIORITY APPLN. INFO.: | | | JP 1996-335217 | A 199612 16 |
| | | | JP 1997-301457 | A 199711 04 |
| OTHER SOURCE(S): | | | MARPAT 129:87816 | |
| GI | | | | |

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Compds. suitable for use in electroluminescent devices are described by such general formula as I (A= Q, Q1, Q2; Ar1-6 = independently selected (un)substituted aryl groups; X1-6 = independently selected O, S, C=O, SO2, Si(B1)B2, N(B1), PB1, P(:O)B1-, -(CH2)x-O-(CH2)y-, (un)substituted alkylene groups, or (un)substituted alicyclic moieties; B1 and B2 = independently selected (un)substituted alkyl group or a (un)substituted aryl group), etc. The materials may be hole-injecting materials. Devices using the materials, including display devices, are also described, as is the use of the materials in the devices.

IT 209165-19-5 209165-20-8 209165-21-9

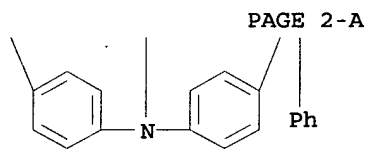
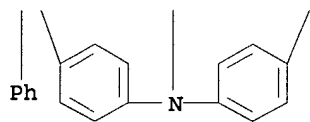
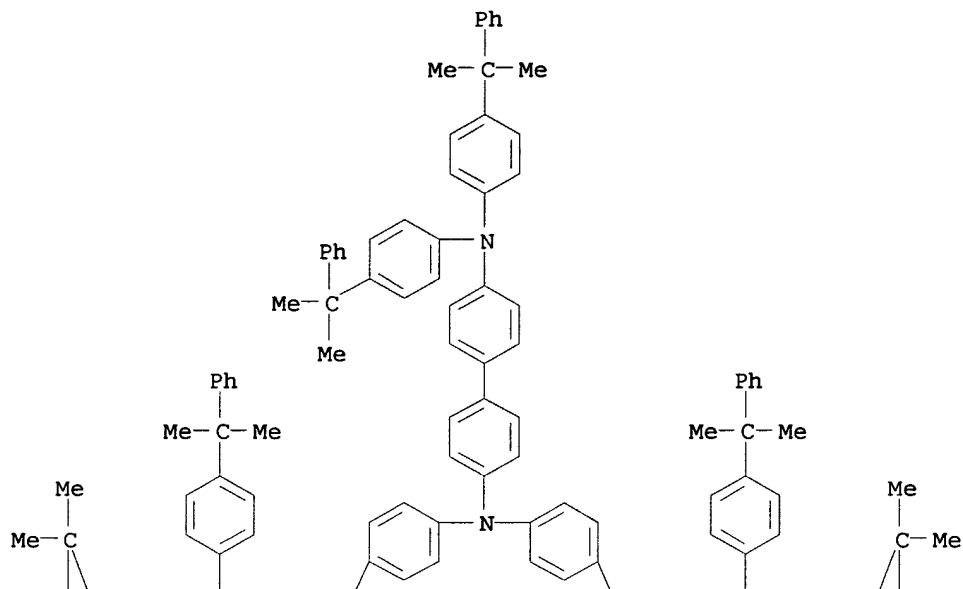
RL: DEV (Device component use); USES (Uses)

(materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

RN 209165-19-5 HCAPLUS

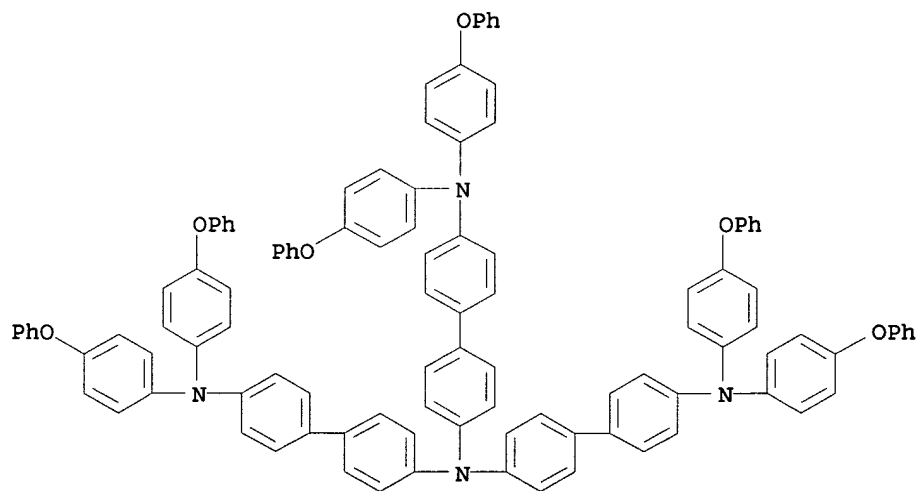
CN [1,1'-Biphenyl]-4,4'-diamine, N-[4'-[bis[4-(1-methyl-1-phenylethyl)phenyl]amino][1,1'-biphenyl]-4-yl]-N-[4'-[bis[4-(1-methyl-1-phenylethyl)phenyl]amino][1,1'-biphenyl]-4-yl]-N',N'-bis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



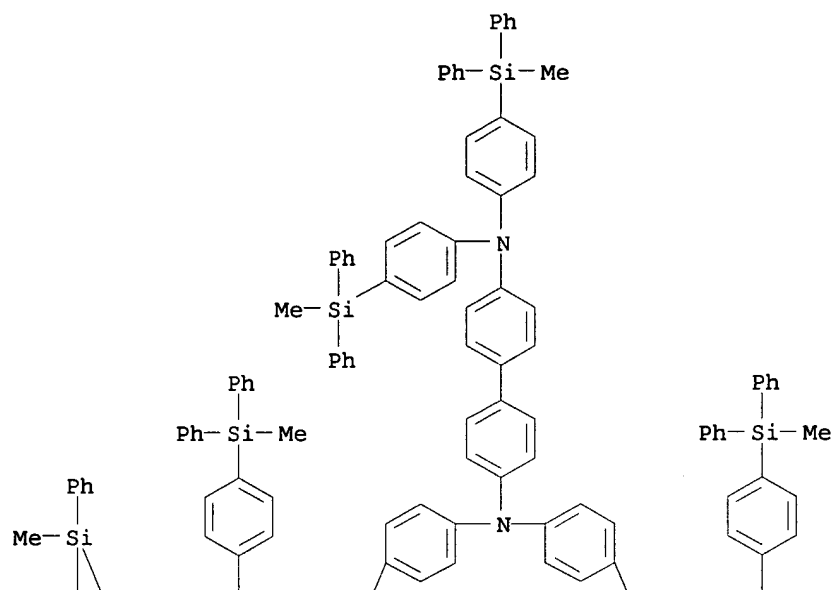
PAGE 2-A

RN 209165-20-8 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(4-phenoxyphenyl)amino][1,1'-biphenyl]-4-yl]-N',N'-bis(4-phenoxyphenyl)-(9CI) (CA INDEX NAME)

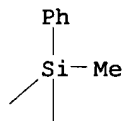


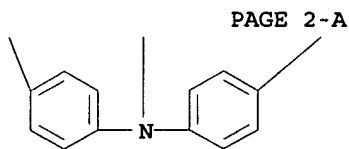
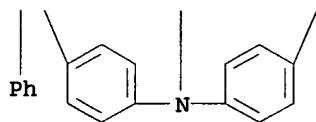
RN 209165-21-9 HCAPLUS
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis[4-(methyldiphenylsilyl)phenyl]amino][1,1'-biphenyl]-4-yl]-N',N'-bis[4-(methyldiphenylsilyl)phenyl]- (9CI) (CA INDEX NAME)

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PAGE 1-B





PAGE 2-A

PAGE 2-B



IC ICM H05B033-14
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74, 76
 IT Polycarbonates, uses
 RL: **DEV (Device component use); USES (Uses)**
 (materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)
 IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 15082-28-7
 24936-68-3, uses 123847-85-8, 4,4'-Bis(N-(1-naphthyl)-N-phenylamino)biphenyl 175395-59-2 188049-36-7 209165-05-9
 209165-06-0 209165-08-2 209165-10-6 209165-12-8 209165-14-0
 209165-15-1 209165-16-2 209165-17-3 209165-18-4
 209165-19-5 209165-20-8 209165-21-9
 209165-22-0 209165-23-1 209165-24-2 209165-26-4 209165-27-5
 209165-28-6 209165-29-7 209165-31-1 209165-32-2 209165-34-4
 RL: **DEV (Device component use); USES (Uses)**
 (materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)
 IT 209165-07-1P
 RL: **DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)**
 (materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)
 IT 209165-09-3P 209165-25-3P 209165-30-0P
 RL: **DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)**
 (materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

L34 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:389245 HCAPLUS
 DOCUMENT NUMBER: 129:87837
 TITLE: Triarylamine derivative hole-transporting agent and its use in electroluminescent device and electrophotographic photoreceptor
 INVENTOR(S): Tamano, Michiko; Okutsu, Satoshi; Enokida, Toshio
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

JP 10158642

A2

19980616

JP 1996-321261

199612
02

JP 3575198

B2

20041013

JP 1996-321261

PRIORITY APPLN. INFO.:

199612
02

OTHER SOURCE(S): MARPAT 129:87837

AB The hole-transporting agent is a triarylamine deriv.
 N(Ar1NR1R2)(Ar2NR3R4)(Ar3NR5R6) [I; R1-6 = (substituted) aryl; Ar1-3 = (substituted) arylene]. The electroluminescent device has a I-contg. layer, preferably a hole-injection layer or a light-emitting layer. The electrophotog. photoreceptor contains I and a charge-generating agent. I gives electroluminescent devices with high emission, efficiency, and long service life and electrophotog. photoreceptors with high sensitivity and durability in repeated use.

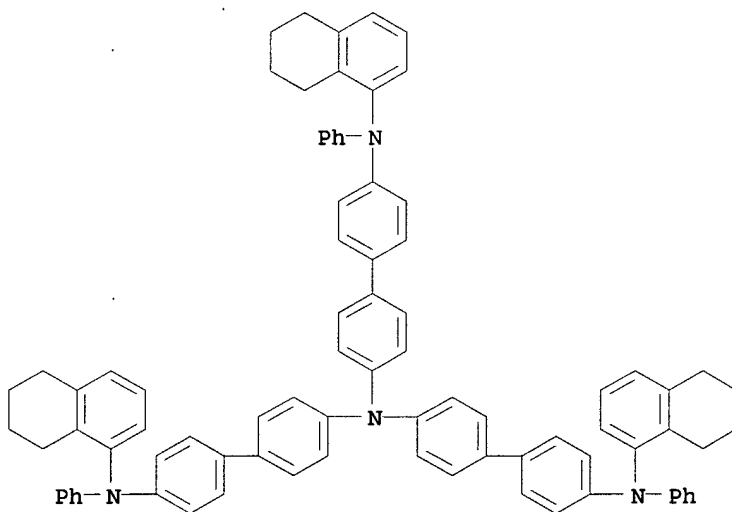
IT 192181-14-9

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(triarylamine deriv. hole-transporting agent used in electroluminescent device and electrophotog. photoreceptor)

RN 192181-14-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-phenyl-N',N'-bis[4'-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino][1,1'-biphenyl]-4-yl]-N-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS G03G005-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 192181-01-4 192181-02-5 192181-03-6 192181-04-7 192181-05-8
 192181-07-0 192181-08-1 192181-09-2 192181-10-5 192181-11-6
 192181-13-8 192181-14-9 209257-69-2 209257-70-5
 209257-71-6 209257-72-7 209257-73-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

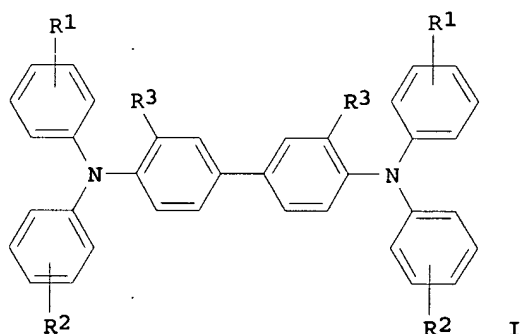
(triarylamine deriv. hole-transporting agent used in electroluminescent device and electrophotog.)

photoreceptor)

L34 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:740336 HCAPLUS
 DOCUMENT NUMBER: 126:39393
 TITLE: Electroluminescent device
 INVENTOR(S): Fukuyama, Masao; Suzuki, Mutsumi; Murakami, Mutsuaki
 PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|----------|
| JP 08259934 | A2 | 19961008 | JP 1995-60749 | 19950320 |
| JP 3449020 | B2 | 20030922 | JP 1995-60749 | 19950320 |

PRIORITY APPLN. INFO.:
 OTHER SOURCE(S): MARPAT 126:39393
 GI

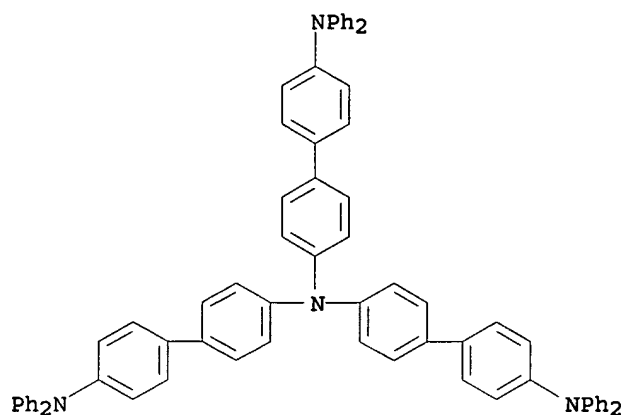


AB An electroluminescent device, suited for use in display devices, comprises a light-emitting layer placed next to a mixed layer which is composed of amine compds. and the light-emitting material used in the light-emitting layer, wherein the amine compd. is represented by I (R1, R2 = H, Ph, lower mol. wt. alkyl or alkoxy group substituted Ph, lower mol. wt. alkyl and alkoxy groups; R3 = H, Me, methoxy, and Cl; one of R1 and R2 is iso-Bu, sec-Bu, tert-Bu, Ph, lower mol. wt. alkyl substituted Ph, or lower mol. wt. alkoxy substituted phenyl).

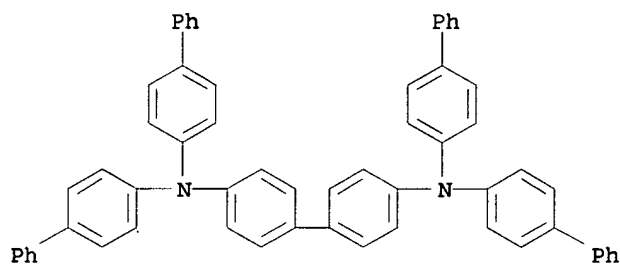
IT 128396-99-6 164724-35-0 167218-52-2
 167218-57-7 167218-75-9 167218-95-3
 167218-97-5 184033-65-6 184033-66-7
 RL: DEV (Device component use); USES (Uses)
 (hole transport material for electroluminescent device)

RN 128396-99-6 HCAPLUS

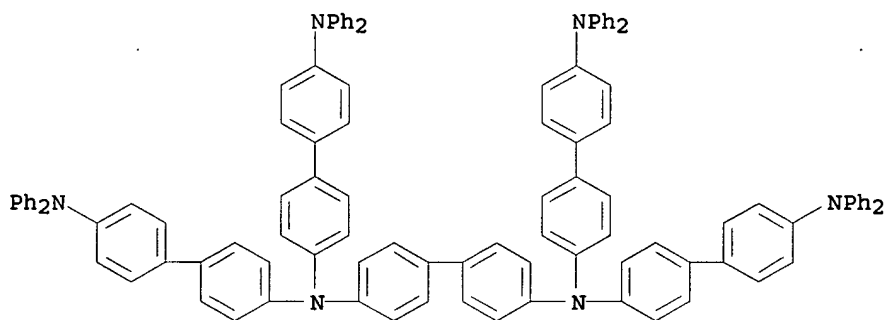
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



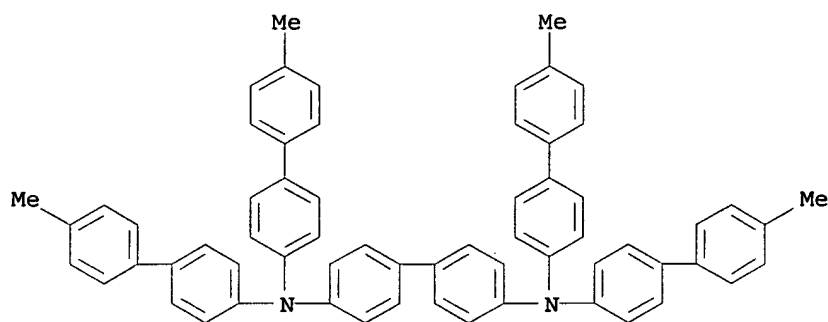
RN 164724-35-0 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 167218-52-2 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



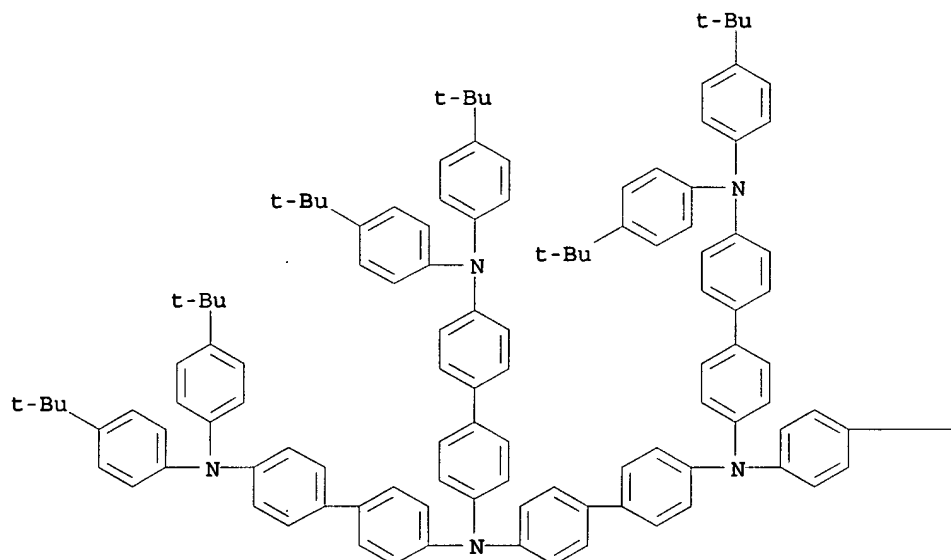
RN 167218-57-7 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



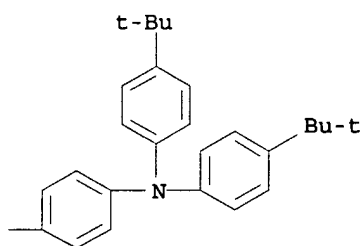
RN 167218-75-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis[4'-[bis(4-(1,1-dimethylethyl)phenyl)amino][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A

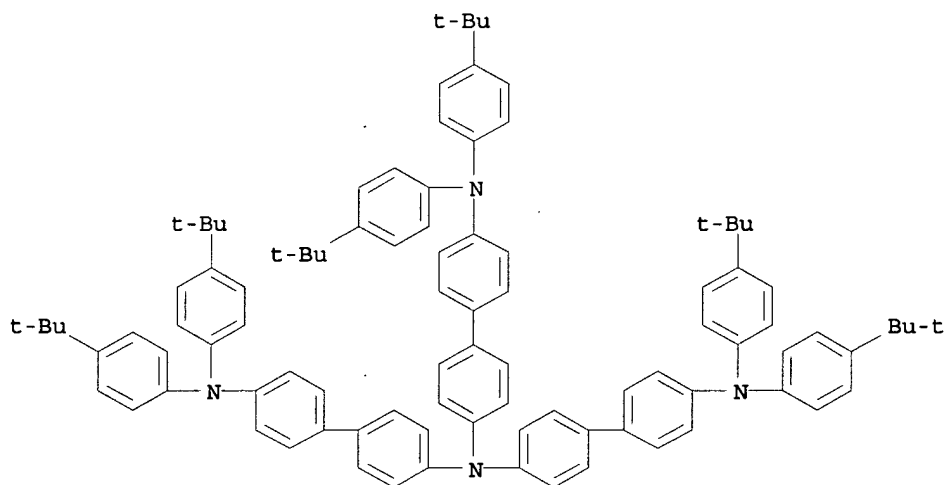


PAGE 1-B



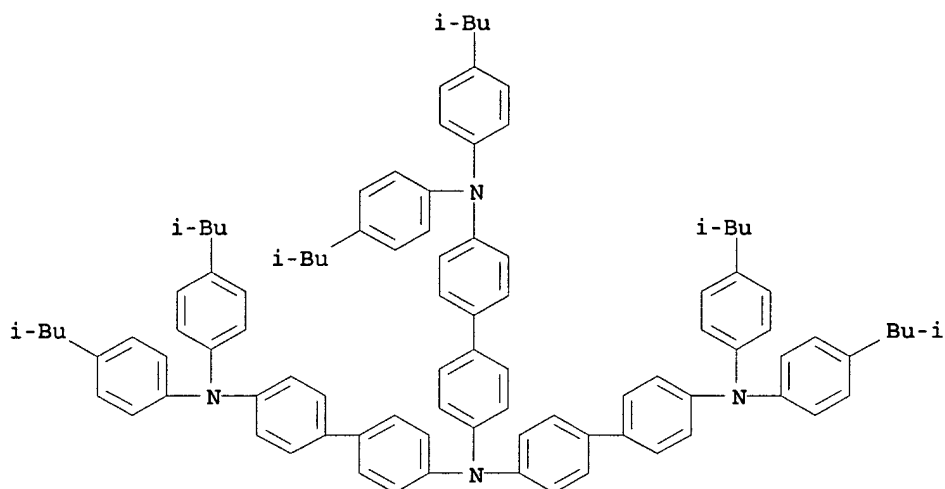
RN 167218-95-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis[4-(1,1-dimethylethyl)phenyl]amino][1,1'-biphenyl]-4-yl]-N',N'-bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



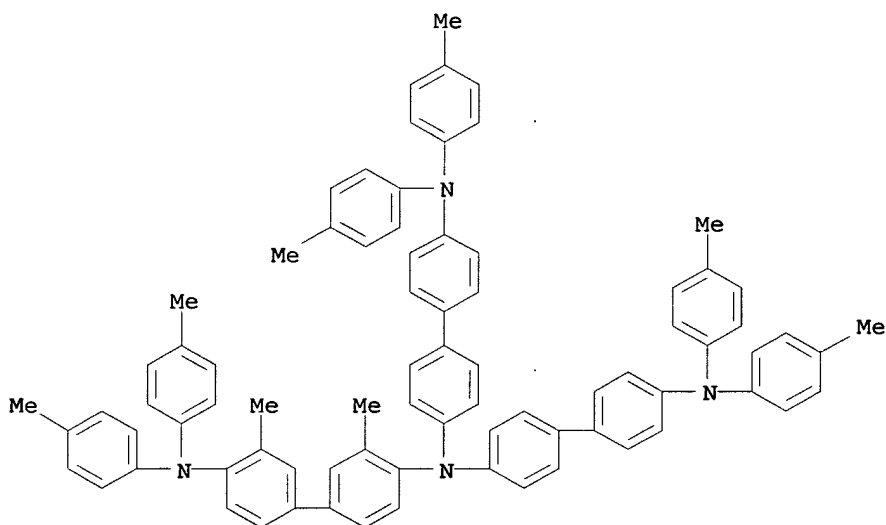
RN 167218-97-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis[4-(2-methylpropyl)phenyl]amino][1,1'-biphenyl]-4-yl]-N',N'-bis[4-(2-methylpropyl)phenyl]- (9CI) (CA INDEX NAME)



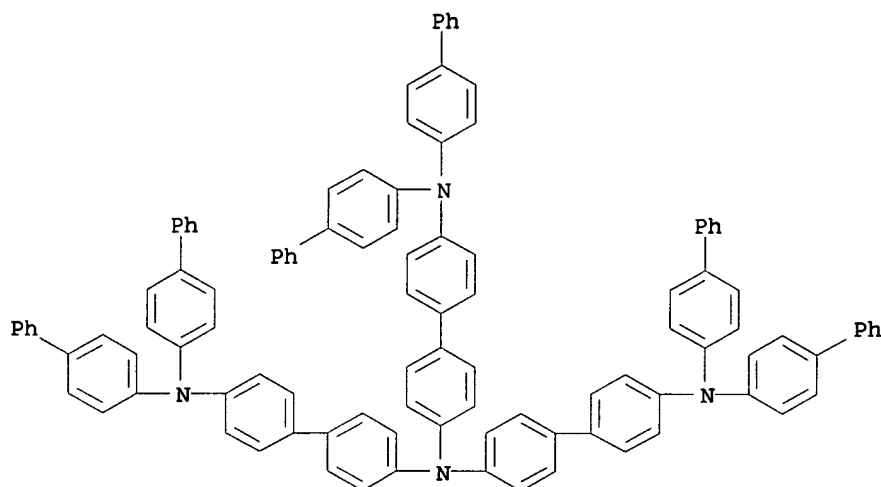
RN 184033-65-6 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-3,3'-dimethyl-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 184033-66-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-4-yl)-N',N'-bis[4'-(bis([1,1'-biphenyl]-4-yl)amino)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06
ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

IT Amines, uses
RL: DEV (Device component use); USES (Uses)
(hole transport material for electroluminescent device)

IT 2085-33-8
RL: DEV (Device component use); USES (Uses)
(electroluminescent device)

IT 128396-99-6 164724-35-0 167218-43-1
167218-44-2 167218-45-3 167218-46-4 167218-52-2
167218-53-3 167218-57-7 167218-58-8 167218-75-9
167218-95-3 167218-97-5 178698-01-6
184033-63-4 184033-64-5 184033-65-6 184033-66-7
184033-67-8 184033-68-9
RL: DEV (Device component use); USES (Uses)
(hole transport material for electroluminescent device)

L34 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:769803 HCAPLUS

DOCUMENT NUMBER: 123:183664

TITLE: Amine compound and electro-luminescence device comprising same.

INVENTOR(S): Tomiyama, Hiromitsu; Oshino, Masahiko; Nakanishi, Naoko; Suzuki, Mutsumi; Fukuyama, Masao; Murakami, Mutsuaki; Nambu, Taro

PATENT ASSIGNEE(S): Hodogaya Chemical Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.

SOURCE: Eur. Pat. Appl., 98 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| EP 650955 | A1 | 19950503 | EP 1994-117206 | 19941031 |
| EP 650955 | B1 | 19980819 | | |

R: DE, FR, GB
JP 07126615

A2 19950516 JP 1993-273883
199311
01

JP 3194657 B2 20010730
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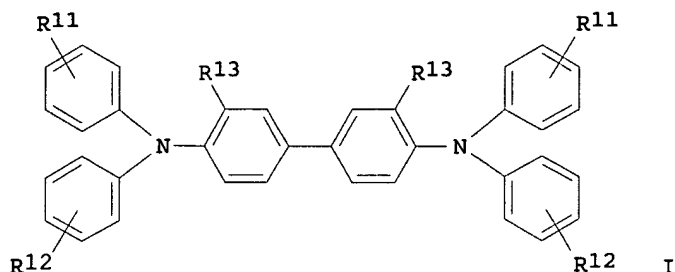
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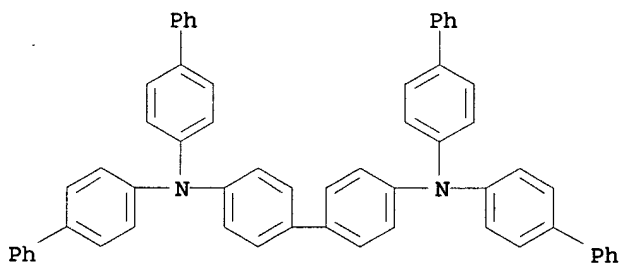
AB Novel amine compds. useful as electron-transporting materials to be incorporated in org. electro-luminescence (EL) devices are described, e.g., having the formula I [R1, R2 = H, alkyl, alkoxy, Ph, alkylphenyl, alkoxyphenyl, with the proviso that ≥ 1 of R1 and R2 is n-Bu, i-Bu, sec-Bu, tert-Bu, Ph, alkoxyphenyl, alkylphenyl; R3 = H, alkyl, alkoxy, Cl]. Five more Markush structures are given. The org. EL device can find wide application in various display units, requires a low applied voltage and exhibits a high luminance and an excellent stability.

IT 164724-35-0 167218-55-5 167218-57-7
167218-75-9 167218-77-1 167218-78-2
167218-79-3 167218-92-0 167218-93-1
167218-94-2 167218-95-3 167218-96-4
167218-97-5 167218-98-6 167218-99-7
167219-00-3 167219-01-4

RL: DEV (Device component use); USES (Uses)
(amine compd. as electron-transporting material for electroluminescent devices)

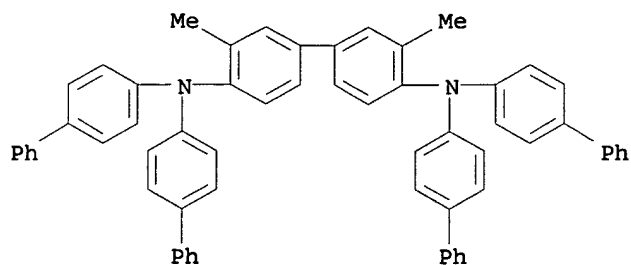
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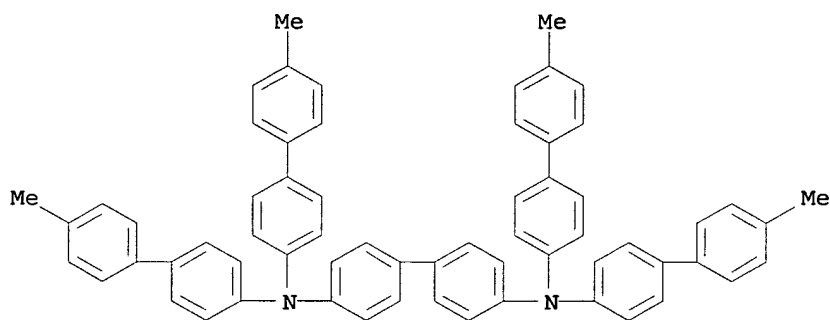
RN 167218-55-5 HCAPLUS

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RN 167218-57-7 HCAPLUS

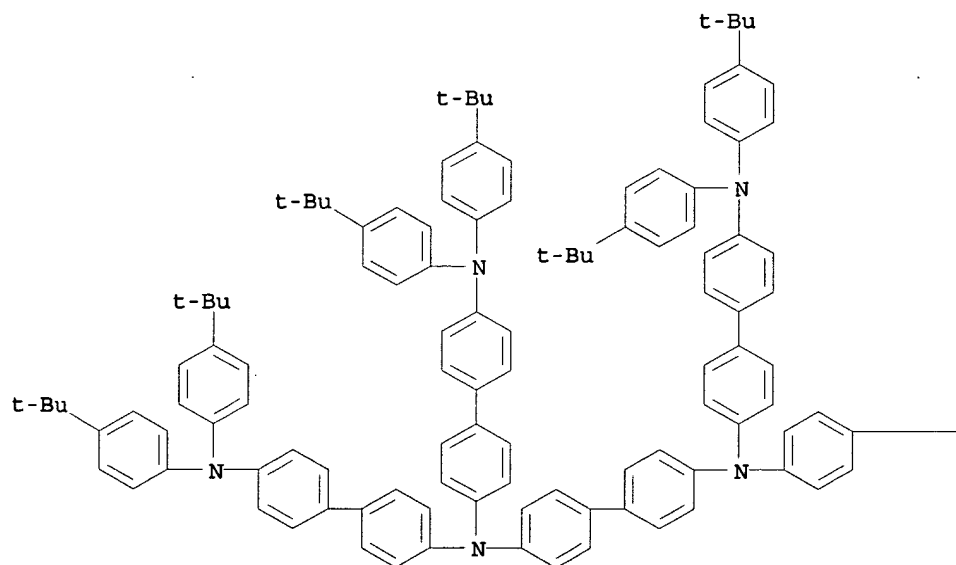
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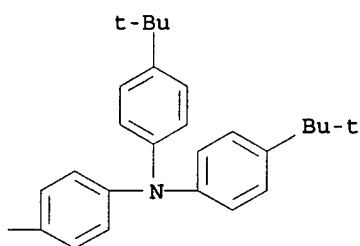
RN 167218-75-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis[4'-[bis[4-(1,1-dimethylethyl)phenyl]amino][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

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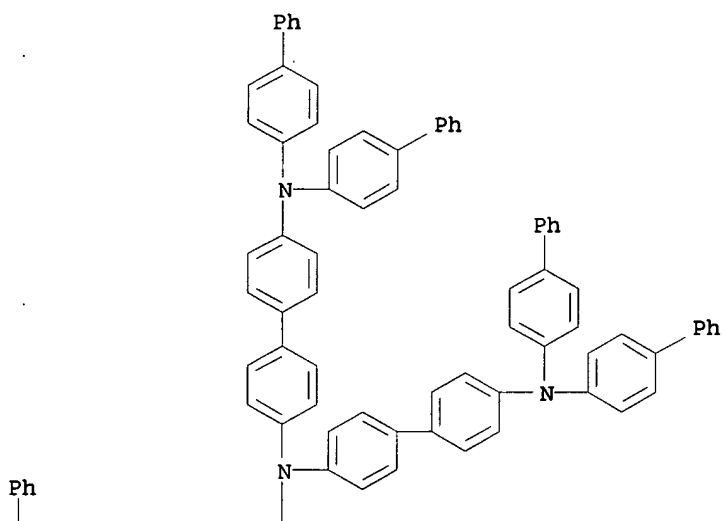
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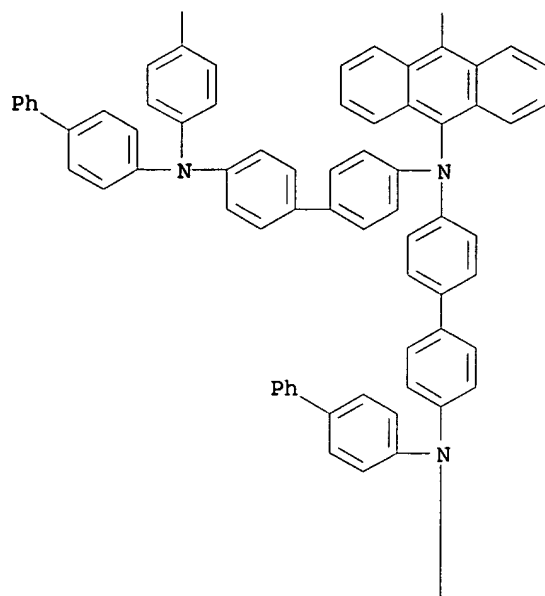
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CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

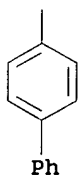
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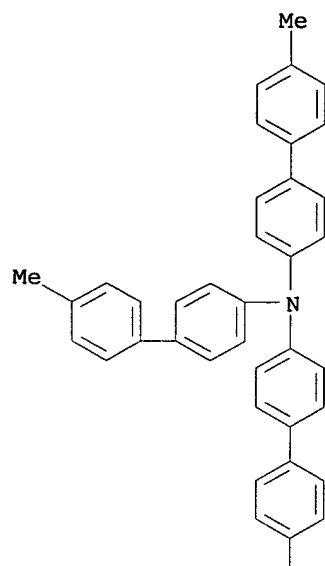


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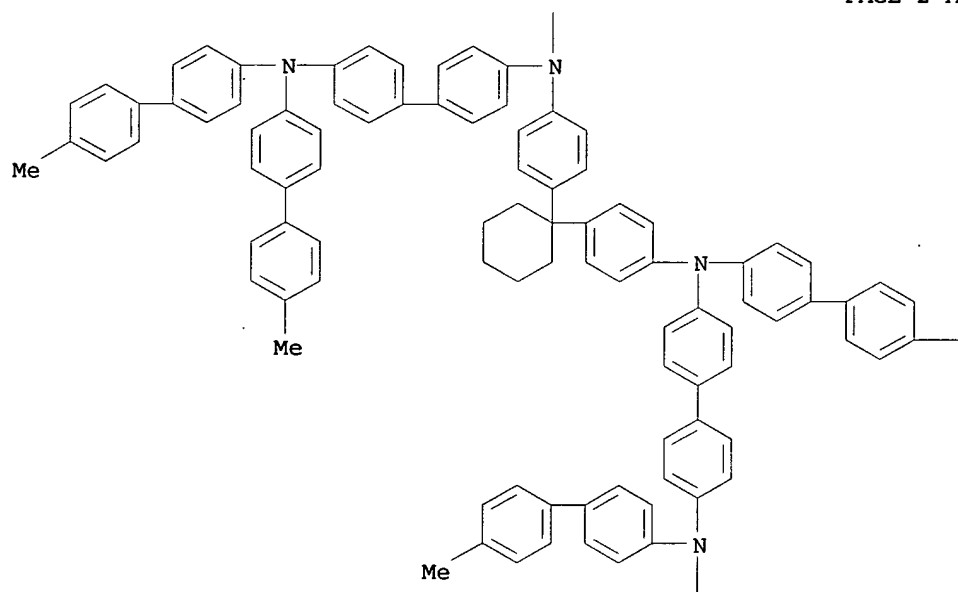


RN 167218-78-2 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N''-(cyclohexylidenedi-4,1-phenylene)bis[N-[4'-[bis(4'-methyl[1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N',N'-bis(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

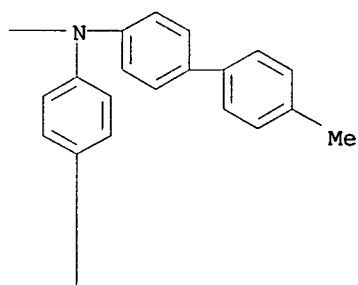
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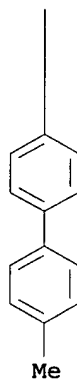
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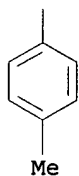
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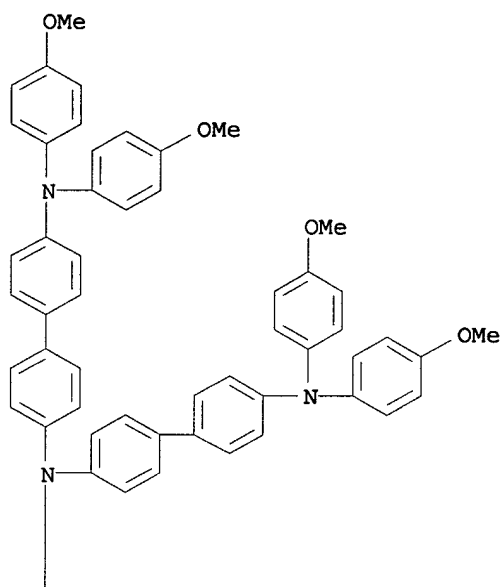


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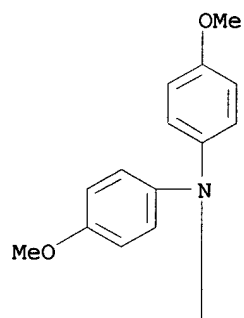
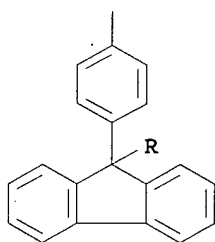


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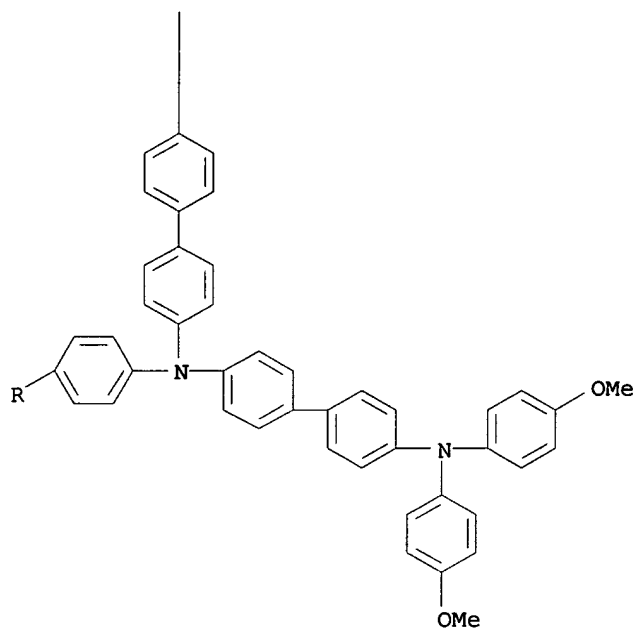
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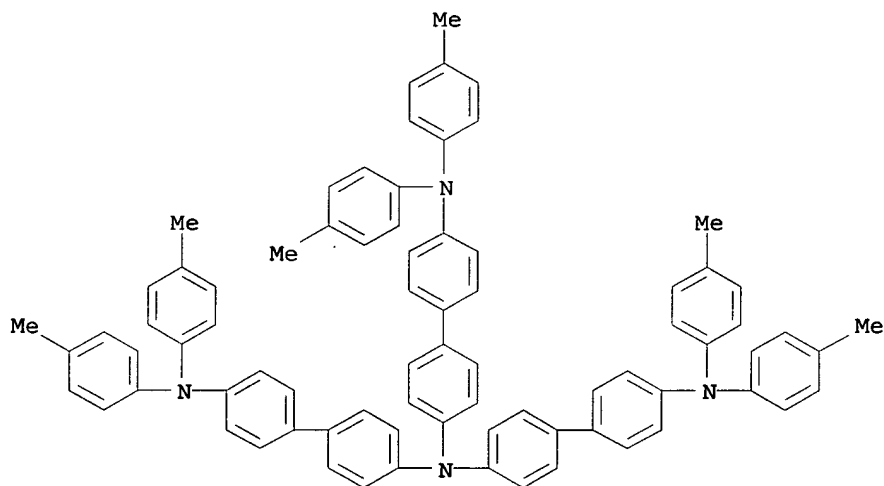
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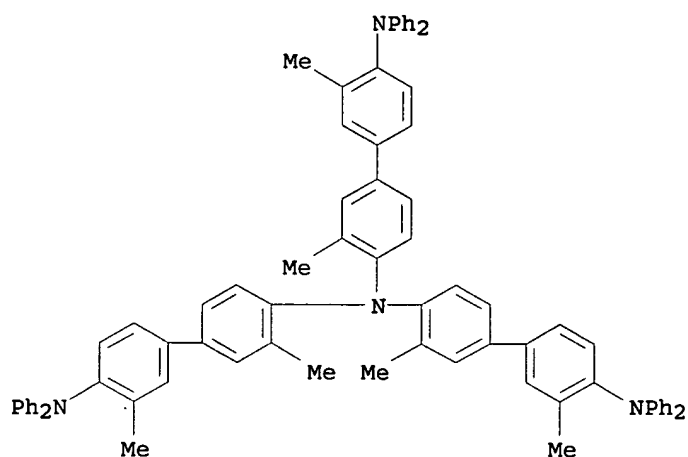
PAGE 3-A



RN 167218-92-0 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4'-[bis(4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N',N'-bis(4-methylphenyl)-(9CI) (CA INDEX NAME)

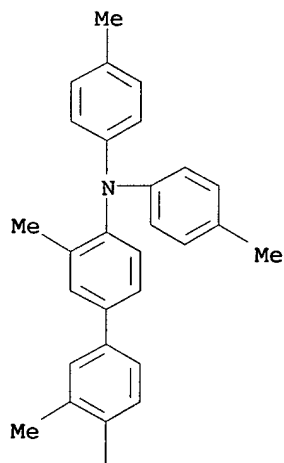


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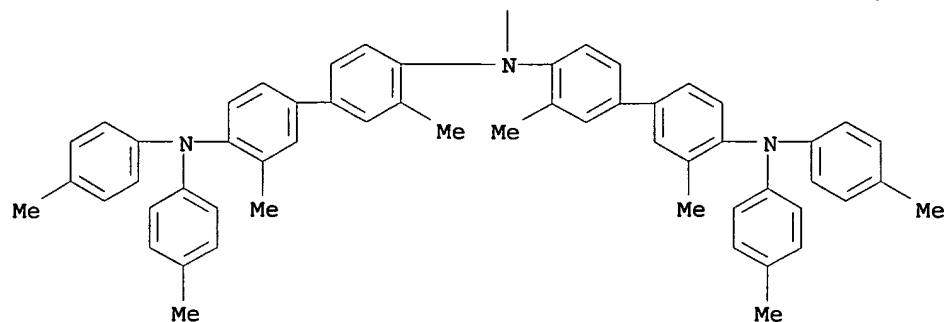


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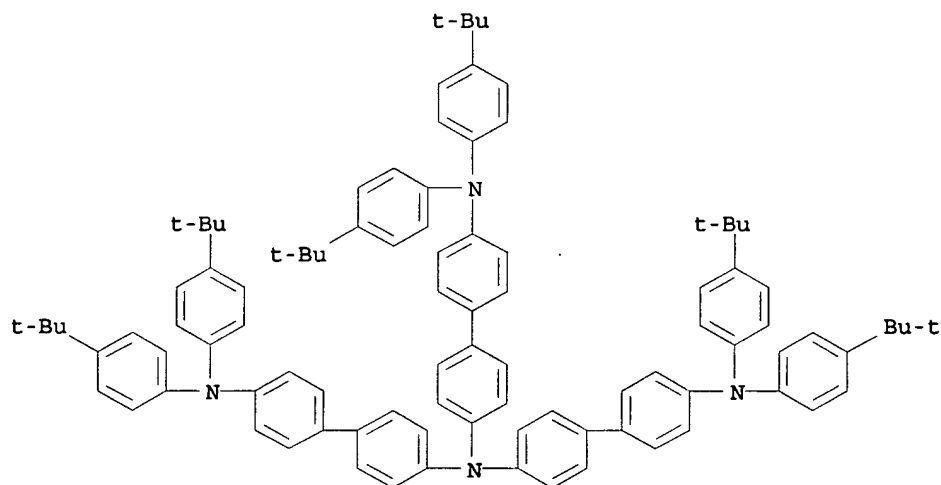


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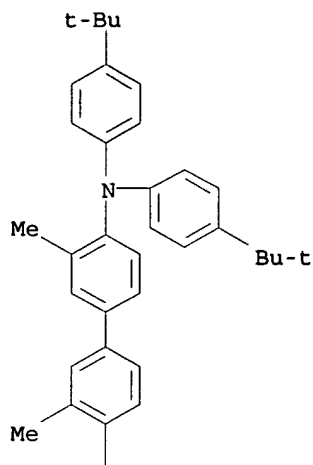
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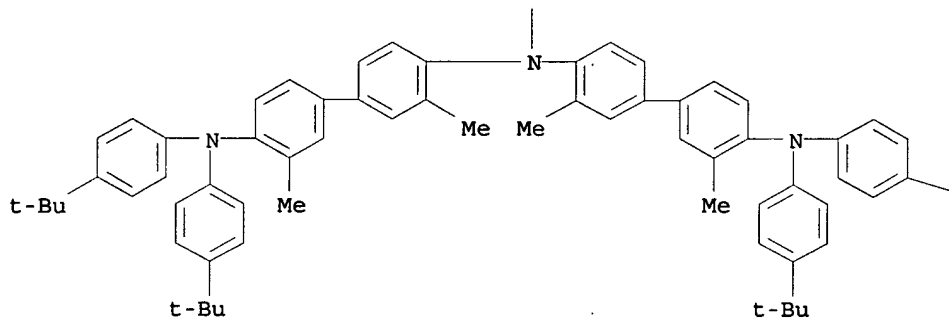
RN 167218-96-4 HCAPLUS

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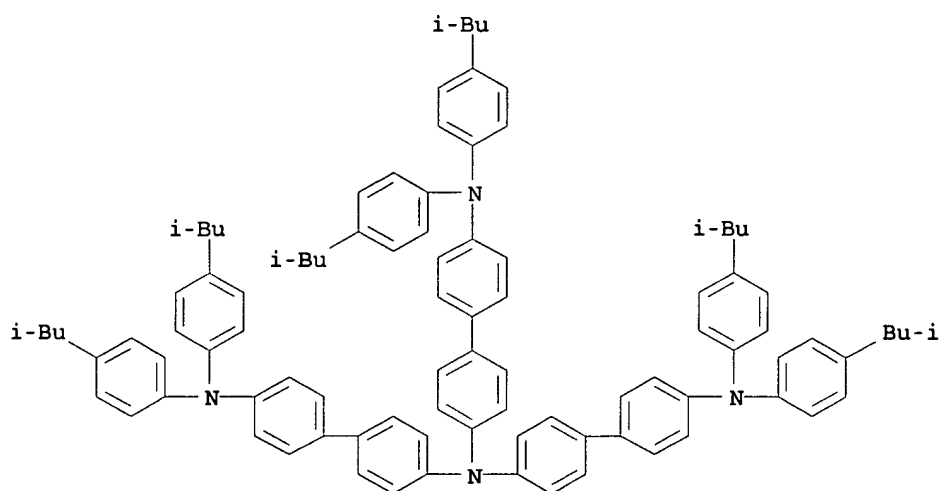
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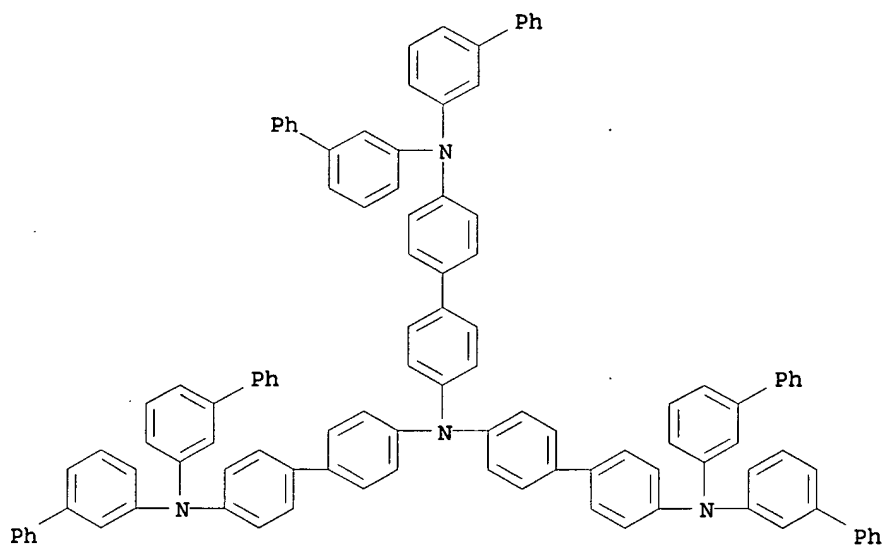
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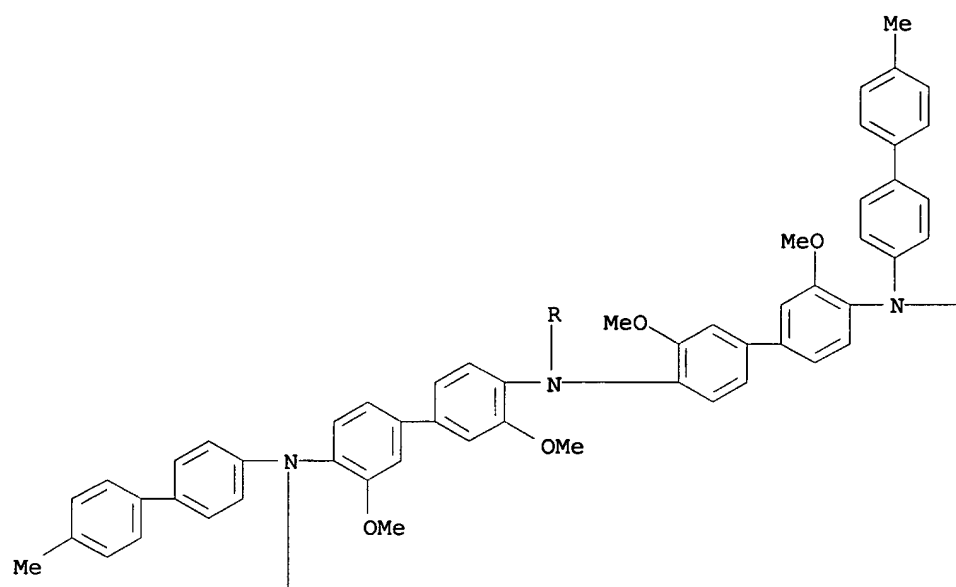
CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis([1,1'-biphenyl]-3-yl)-N',N'-bis[4'-[bis([1,1'-biphenyl]-3-yl)amino][1,1'-biphenyl]-4-yl]- (9CI)
(CA INDEX NAME)



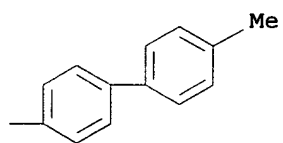
RN 167218-99-7 HCAPLUS

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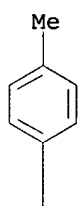
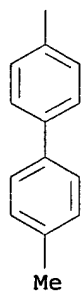
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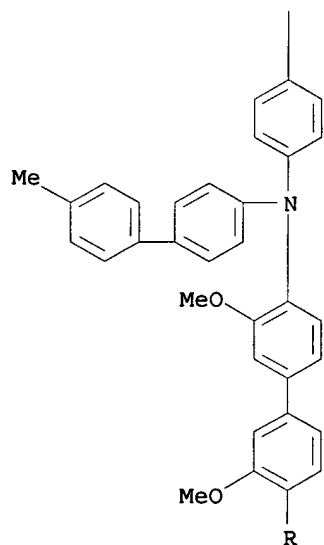
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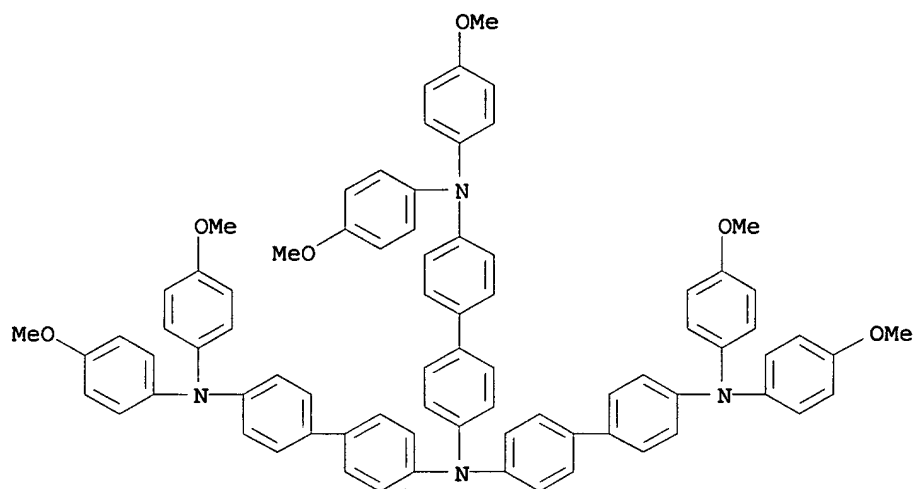
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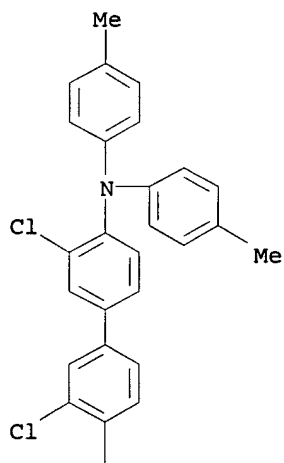


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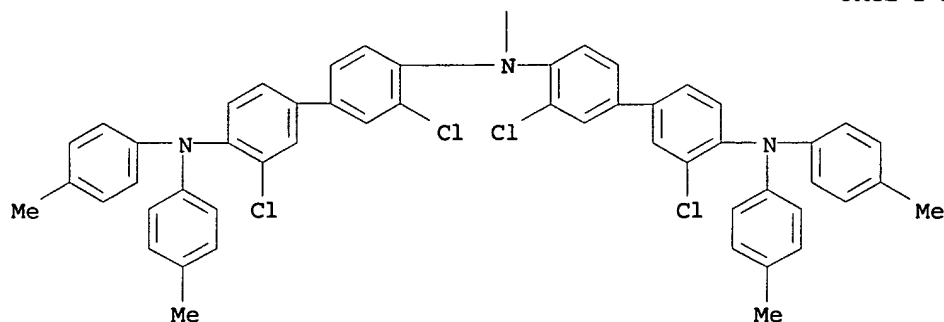


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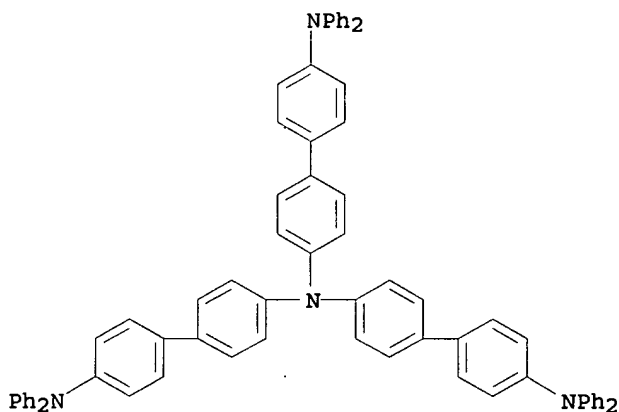


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167218-52-2P

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(amine compd. as electron-transporting material for
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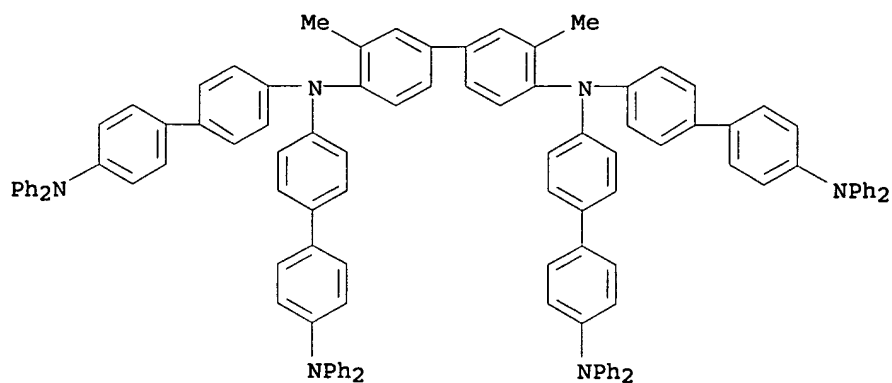
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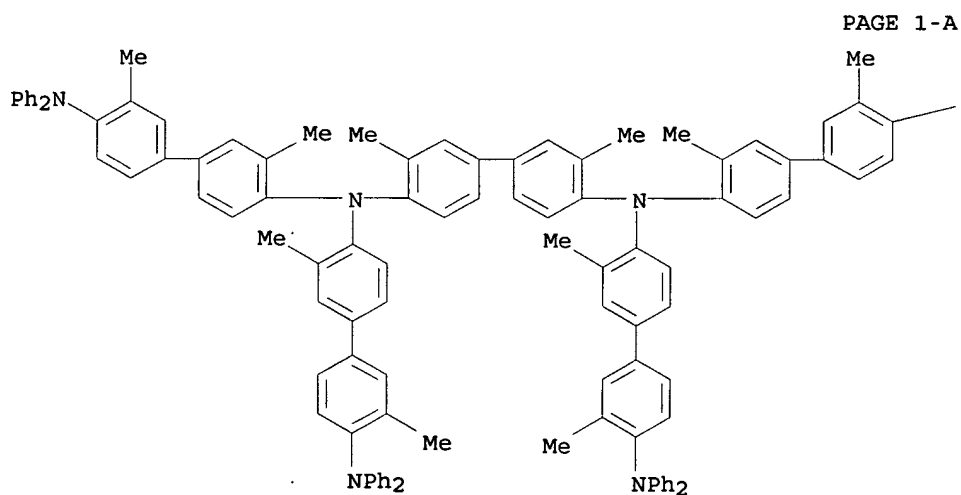
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NAME)



RN 167218-42-0 HCAPLUS

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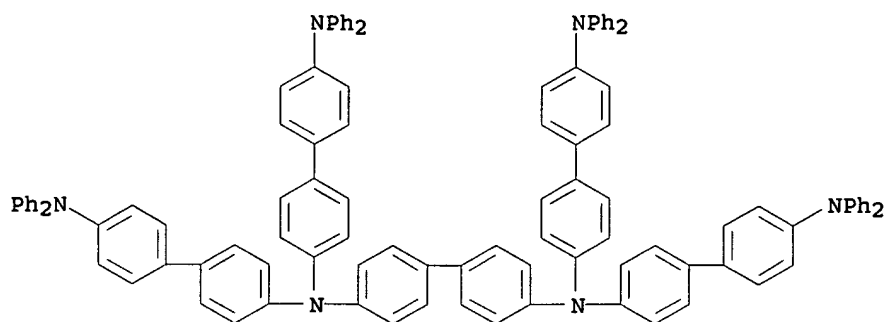
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PAGE 1-B

—NPh₂

RN 167218-52-2 HCAPLUS

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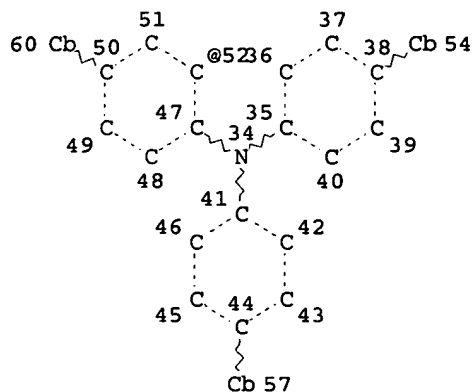
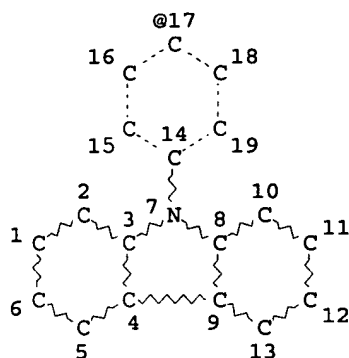


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 Photographic and Other Reprographic Processes)
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 (amine compd. as electron-transporting material for
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 RL: DEV (Device component use); SPN (Synthetic
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 (amine compd. as electron-transporting material for
 electroluminescent devices)

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FILE 'REGISTRY' ENTERED AT 15:29:13 ON 01 AUG 2006
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=> d 135 que stat
 L9 STR



G1 62

VAR G1=17/52

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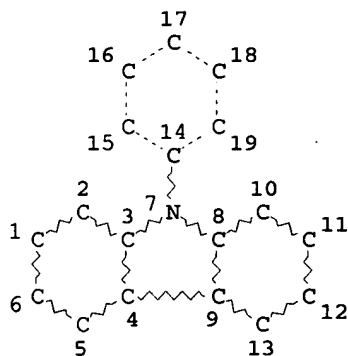
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L16 2405 SEA FILE=HCAPLUS ABB=ON PLU=ON L14

L17 234 SEA FILE=HCAPLUS ABB=ON PLU=ON L15

L18 45 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND L17
 L19 155 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 (L) PHOSPHORESCEN?
 L20 60 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 (L) PHOSPHORESCEN?
 (L) ?LUMINESCEN?
 L21 155 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 OR L20
 L22 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND PHOTOCHEM?/SC,SX

 L23 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 (L) PHOSPHORESCEN?
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 L25 118 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 OR L24
 L27 104 SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND DEV/RL AND
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 L35 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 NOT L33 NOT L28

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L35 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:544401 HCAPLUS

DOCUMENT NUMBER: 145:53407

TITLE: A phosphorescent organometallic complex for use
as a light-emitting element having good
chromaticity for light-emitting devices

INVENTOR(S): Inoue, Hideko; Seo, Satoshi; Ohsawa, Nobuharu

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: PCT Int. Appl., 139 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2006059802 | A1 | 20060608 | WO 2005-JP22593 | 20051201 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM JP 2006182772 A2 20060713 JP 2005-347754 | | | | |

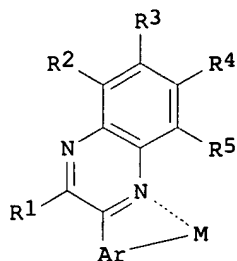
PRIORITY APPLN. INFO.:

JP 2004-351770

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200512
01200412
03

GI



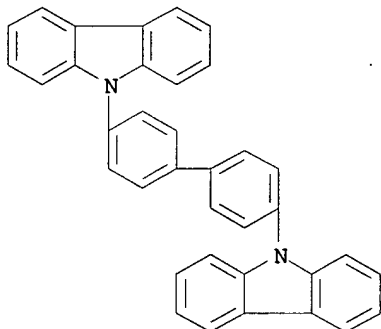
I

AB A phosphorescent organometallic complex is described for use as a light-emitting element having good chromaticity for light-emitting devices. Thus, the organometallic complex includes a structure I (R1 = C1-4 alkyl; R2-R5 = H, halogen, acyl, alkyl, alkoxyl, aryl, CN, heterocycle; Ar = aryl, heterocycle, preferably, an aryl group has an electron withdrawing group or a heterocyclic group has an electron withdrawing group; M = Group 9- or Group 10 element).

IT 58328-31-7, 4,4'-Bis-(N-carbazolyl)biphenyl
 RL: DEV (Device component use); USES (Uses)
 (characterization of light-emitting devices contg.
 phosphorescent organometallic complexes)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 29, 73

IT 2085-33-8, Alq3 7439-93-2, Lithium, uses 7631-86-9, Silica, uses 50926-11-9, ITO 58328-31-7, 4,4'-Bis-(N-carbazolyl)biphenyl 123847-85-8, NPB 199121-98-7
 RL: DEV (Device component use); USES (Uses)
 (characterization of light-emitting devices contg.
 phosphorescent organometallic complexes)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN

THE RE FORMAT

L35 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2006:469488 HCAPLUS
 DOCUMENT NUMBER: 144:477871
 TITLE: Small molecular organic electroluminescent display device with light emitting layer comprising at least one phosphorescent dopant and at least two host materials and its fabrication by laser-induced thermal imaging
 INVENTOR(S): Lee, Jun-Yeob
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|------------|
| US 2006103298 | A1 | 20060518 | US 2005-272680 | 20051115 |
| JP 2006148045 | A2 | 20060608 | JP 2005-151497 | 20050524 |
| CN 1780019 | A | 20060531 | CN 2005-10123312 | 20051117 |
| PRIORITY APPLN. INFO.: | | | KR 2004-94365 | A 20041117 |

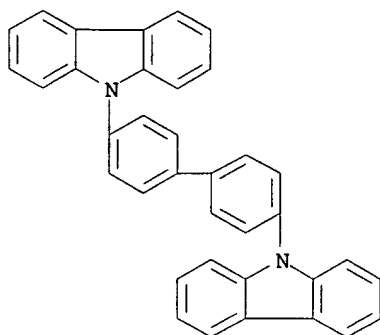
AB An org. electroluminescent display (OLED) device and a method of fabricating the same are disclosed. The OLED device includes a substrate, a first electrode, an org. layer contg. at least one light emitting layer, and a second electrode. The light emitting layer comprises at least one phosphorescent dopant and at least two host materials. Thus, e.g., the following device fabricated by a laser-induced thermal imaging process: NPD (50 nm, hole-injecting and hole-transporting layer) is deposited on ITO; bis(2-phenylquinoline)iridium acetylacetonate - a phosphorescent dopant - is doped at 5% wt./wt. to a host material of CBP (25%) and Balq (75%) to form a light-emitting layer (30 nm) in the donor substrate; the NPD layer is arranged to face the transfer layer of the donor substrate, laminated, and then laser irradiation of the donor substrate transfers the light-emitting layer; thereafter Balq (5 nm, hole-blocking layer) and Alq3 (20 nm, electron-transporting layer) are deposited, then LiF (1 nm) and Al (300 nm) exhibited an efficiency of 9 cd/A, life span @ 1000 cd/m2 of 5000 h, and no crystallization vs. 2 cd/A, 50 h, and crystallization when only a single host material was used.

IT 58328-31-7, CBP

RL: DEV (Device component use); USES (Uses)
 (host; small mol. org. **electroluminescent** display device with light emitting layer comprising **phosphorescent** dopant and at least two host materials and its fabrication by laser-induced thermal imaging)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



INCL 313504000; 313506000

CC 74-9 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 58328-31-7, CBP

RL: DEV (Device component use); USES (Uses)
(host; small mol. org. **electroluminescent** display
device with light emitting layer comprising
phosphorescent dopant and at least two host materials and
its fabrication by laser-induced thermal imaging)

L35 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:169945 HCAPLUS

DOCUMENT NUMBER: 144:243098

TITLE: Organic electroluminescent (EL) devices and
displays, and illumination apparatus and liquid
crystal displays comprising same EL devices as
light sources

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi;
Nakada, Yasunori

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 44 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2006054236 | A2 | 20060223 | JP 2004-233136 | 20040810 |
| PRIORITY APPLN. INFO.: | | | | 20040810 |

AB In the EL devices comprising emission layers contg. hosts and
phosphorescent guests, ≥ 1 kind of the hosts have homogeneous
amorphous phases, and the concns. of the guests to those of hosts
are 10-30 wt.%. Preferably, the phosphorescent guests show
phosphorescent 0-0 band of ≤ 480 nm. Preferable structure of
the guests is also claimed. The devices, displays, LCD, and
illumination app. show high emission efficiency and low driving
voltage.

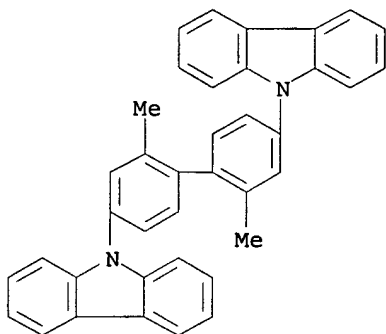
IT 604785-54-8 876622-09-2 876622-10-5
876622-11-6

RL: DEV (Device component use); USES (Uses)
(amorphous host; in org. **electroluminescent**

device/display contg. amorphous host and phosphorescent guest)

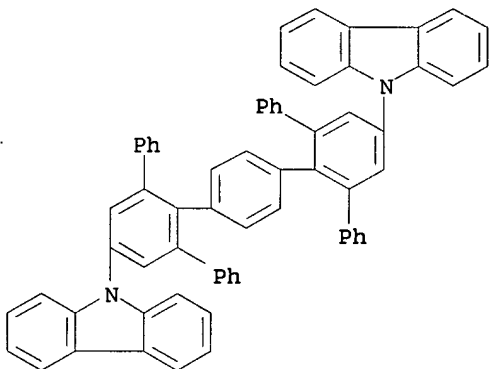
RN 604785-54-8 HCAPLUS

CN 9H-Carbazole, 9,9'-(2,2'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis- (9CI) (CA INDEX NAME)



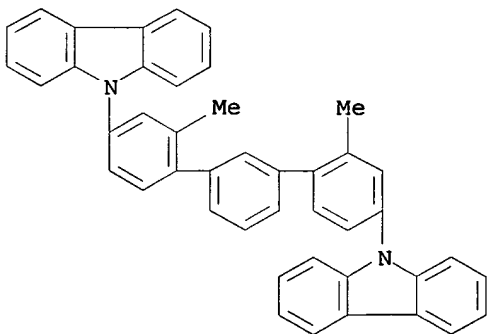
RN 876622-09-2 HCAPLUS

CN 9H-Carbazole, 9,9'-(3',6'''-diphenyl[1,1':2',1''':4'',1''':2''',1''''-quinquephenyl]-4''',5'-diyl)bis- (9CI) (CA INDEX NAME)



RN 876622-10-5 HCAPLUS

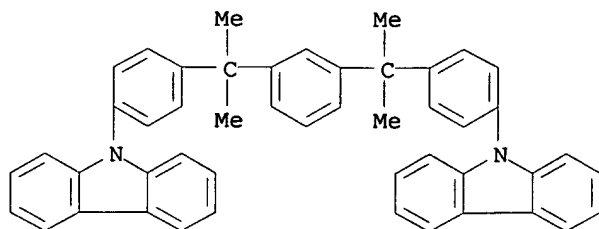
CN 9H-Carbazole, 9,9'-(2,2''-dimethyl[1,1':3',1''-terphenyl]-4,4''-diyl)bis- (9CI) (CA INDEX NAME)



RN 876622-11-6 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,3-phenylenebis[(1-methylethylidene)]-4,1-

phenylene]]bis- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 604785-54-8 876622-08-1 876622-09-2
876622-10-5 876622-11-6

RL: DEV (Device component use); USES (Uses)
(amorphous host; in org. **electroluminescent**
device/display contg. amorphous host and **phosphorescent**
guest)

L35 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:125572 HCAPLUS

DOCUMENT NUMBER: 144:201842

TITLE: Organic electroluminescent device

INVENTOR(S): Okumoto, Kenji

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 48 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2006041395 | A2 | 20060209 | JP 2004-222457 | 200407 29 |
| PRIORITY APPLN. INFO.: | | | | 200407 29 |
| | | | | 200407 29 |

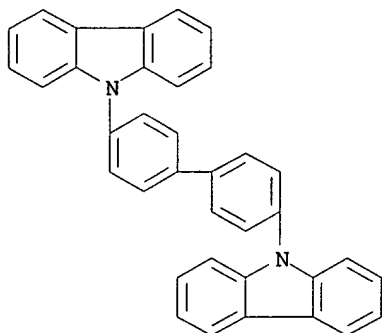
AB The invention relates to an org. electroluminescent device comprising a phosphorescent dopant and a phosphorescent codopant, wherein the phosphorescence peak of the codopant occurs at the wavelength shorter than that of the dopant for enhancing the quantum efficiency of the device.

IT 58328-31-7

RL: DEV (Device component use); USES (Uses)
(**phosphorescent** org. **electroluminescent**
device)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 58328-31-7 123847-85-8, N,N'-Di(1-naphthyl)-N,N'-diphenylbenzidine

RL: DEV (Device component use); USES (Uses)
(phosphorescent org. electroluminescent device)

L35 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1170454 HCAPLUS

DOCUMENT NUMBER: 143:449032

TITLE: Phosphorescence emitting solid, organic electroluminescent element and organic electroluminescent device

INVENTOR(S): Satoh, Tasuku; Sotoyama, Wataru; Sawatari, Norio

PATENT ASSIGNEE(S): Fujitsu Limited, Japan

SOURCE: PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2005103195 | A1 | 20051103 | WO 2004-JP4485 | 20040330 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: WO 2004-JP4485

20040330

AB The invention relates to a phosphorescence emitting solid comprising an organometallic complex which has a tridentate ligand coordinating to a central metal through two nitrogen atoms and one carbon atom positioning between the two nitrogen atoms and binding with the two

nitrogen atoms via bonds and has a halogen atom as a ligand; a luminescent element using the solid; and an org. EL device using the element. The phosphorescence emitting solid can emit a phosphorescence having very high intensity in a solid state, and thus, the use of the solid in an org. EL element allows the significant improvement of the luminous efficiency, which results in the redn. of elec. power consumption in an org. EL device.

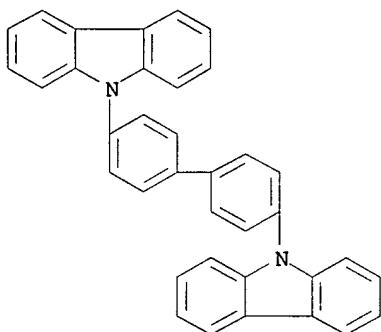
IT 58328-31-7, CBP

RL: DEV (Device component use); USES (Uses)

(phosphorescence-emitting solid contg. organometallic complex, its org. electroluminescence element and org. electroluminescence device)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 29, 74

IT 2085-33-8, Alq3 4733-39-5, BCP 7789-24-4, Lithium fluoride, uses

25067-59-8 58328-31-7, CBP 123847-85-8, α -NPD

126213-51-2, PEDOT 185690-41-9, 2-TNATA

RL: DEV (Device component use); USES (Uses)

(phosphorescence-emitting solid contg. organometallic complex, its org. electroluminescence element and org. electroluminescence device)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1049973 HCAPLUS

DOCUMENT NUMBER: 143:356791

TITLE: Organic electroluminescent device containing fluorescent dopant and phosphorescent dopant in layers

INVENTOR(S): Ito, Mitsunori; Matsuura, Masahide; Yamamoto, Hiroshi; Kawamura, Hisayuki; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

WO 2005091684

A1

20050929

WO 2005-JP4224

200503

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,
UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.:

JP 2004-81156

A

200403

19

AB Disclosed is a highly efficient org. EL device wherein color adjustment for obtaining white emission is easy. Specifically disclosed is an org. electroluminescent device comprising at least an anode layer, an org. light-emitting layer and a cathode layer stacked on top of one another in this order, wherein the org. light-emitting layer has a multilayer structure including at least a first light-emitting layer contg. a fluorescent dopant and a second light-emitting layer contg. a phosphorescent dopant.

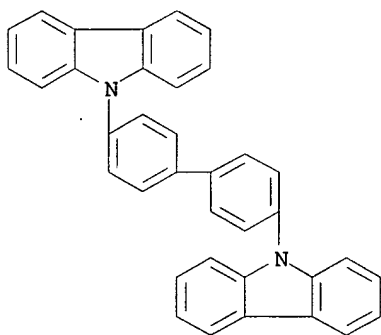
IT 58328-31-7 607739-95-7 862423-37-8

865801-89-4

RL: MOA (Modifier or additive use); USES (Uses)
(org. electroluminescent device contg. fluorescent
dopant and phosphorescent dopant in layers)

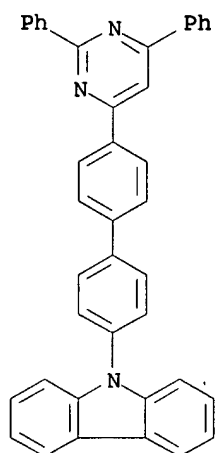
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX
NAME)



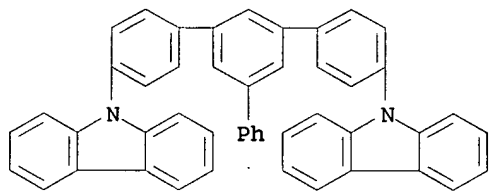
RN 607739-95-7 HCAPLUS

CN 9H-Carbazole, 9-[4'-(2,6-diphenyl-4-pyrimidinyl)[1,1'-biphenyl]-4-
yl]- (9CI) (CA INDEX NAME)



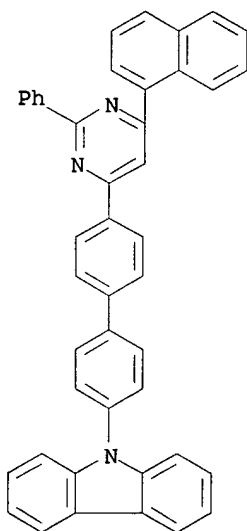
RN 862423-37-8 HCAPLUS

CN 9H-Carbazole, 9,9'-(5'-phenyl[1,1':3',1''-terphenyl]-4,4''-diyl)bis-
(9CI) (CA INDEX NAME)



RN 865801-89-4 HCAPLUS

CN 9H-Carbazole, 9-[4'-[6-(1-naphthalenyl)-2-phenyl-4-pyrimidinyl][1,1'-
biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



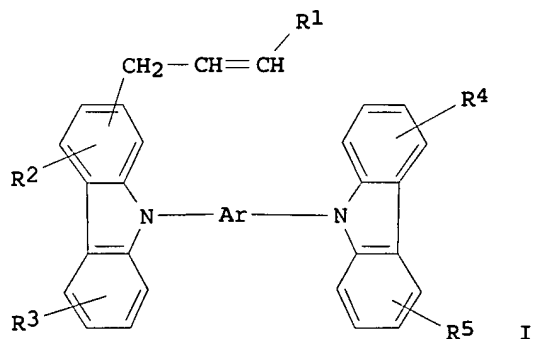
IC ICM H05B033-12
ICS H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
IT 2085-33-8, AlQ3 58328-31-7 186412-15-7 279672-58-1
364765-18-4 435293-93-9 607739-95-7 665005-15-2
800395-01-1 862423-37-8 865801-89-4
RL: MOA (Modifier or additive use); USES (Uses)
(org. electroluminescent device contg. fluorescent
dopant and phosphorescent dopant in layers)
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L35 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:492967 HCAPLUS
DOCUMENT NUMBER: 143:50755
TITLE: Organic electroluminescent devices having
uniform emission layers and display panels
showing high emission efficiency therewith
INVENTOR(S): Suzuki, Satoshi; Okada, Masato; Kashibuchi,
Yoshiyasu; Kobayashi, Toru
PATENT ASSIGNEE(S): Dainippon Printing Co., Ltd., Japan; Takasago
Perfumery Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|------------|
| JP 2005149766 | A2 | 20050609 | JP 2003-381737 | 20031111 |
| US 2005129980 | A1 | 20050616 | US 2004-984355 | 20041109 |
| GB 2409206 | A1 | 20050622 | GB 2004-24955 | 20041111 |
| PRIORITY APPLN. INFO.: | | | JP 2003-381737 | A 20031111 |

OTHER SOURCE(S): MARPAT 143:50755
GI



AB The devices have, between a pair of opposed electrodes, (plural) org. layers including layers (A) contg. polymers of I [Ar = arylene with conjugate bond-concerning C no. 6-60, heterocyclic group with conjugate bond-concerning C no. 4-60; L = (branched or cyclic) (hetero atom-contg.) hydrocarbylene; R1-R5 = H, C1-20 alkyl(oxy), C6-60 aryl(oxy), C7-60 arylalkyl(oxy), C4-60 heterocyclic group, CN, NO2, halo]. Materials for the layers A, being hard to be crystd., show good processability in coating. The layers A may be emission layers wherein emitting materials (e.g., phosphorescent Ir compds.) are dispersed. Electron-transporting layers and hole-transporting layers may be disposed between cathodes and the emitting layers and between anodes and the emitting layers, resp.

IT 58328-31-7P, 4,4'-Bis(carbazol-9-yl)biphenyl

728045-10-1P 757246-61-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

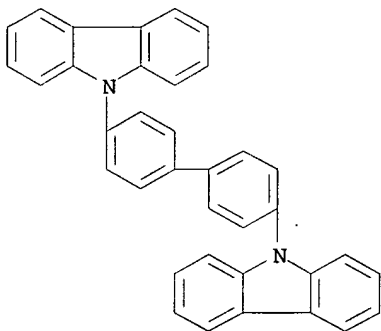
(Preparation); RACT (Reactant or reagent)

(in prepn. of monomers; **phosphorescent** org. EL display

panels having uniformly coated emission layers and showing high emission efficiency)

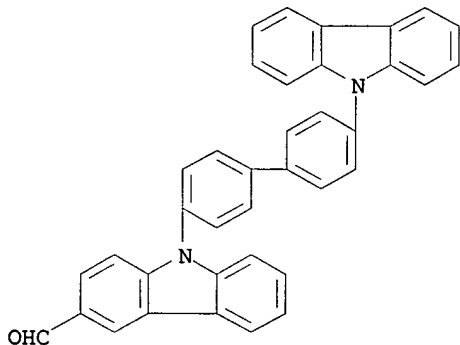
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



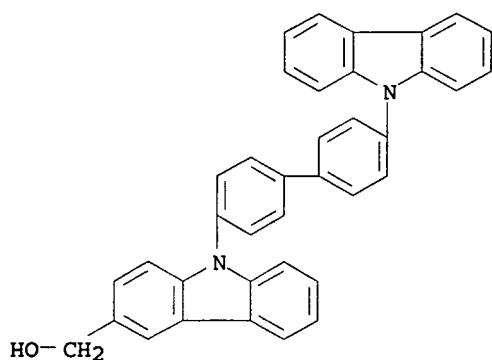
RN 728045-10-1 HCAPLUS

CN 9H-Carbazole-3-carboxaldehyde, 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



RN 757246-61-0 HCAPLUS

CN 9H-Carbazole-3-methanol, 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

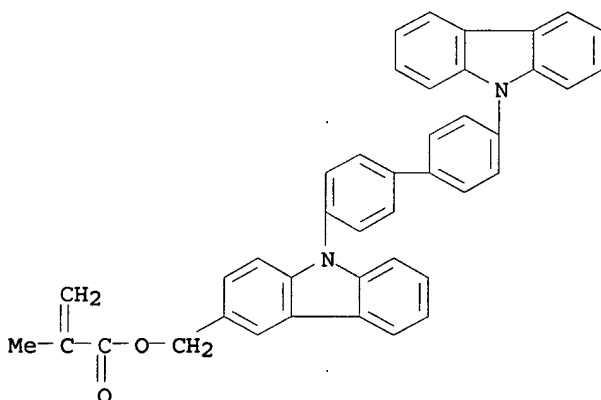


IT 852574-05-1P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (monomers; **phosphorescent** org. EL display panels having uniformly coated emission layers and showing high emission efficiency)

RN 852574-05-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-9H-carbazol-3-yl]methyl ester (9CI) (CA INDEX NAME)



IT 852574-06-2P 852574-07-3P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (**phosphorescent** org. EL display panels having uniformly coated emission layers and showing high emission efficiency)

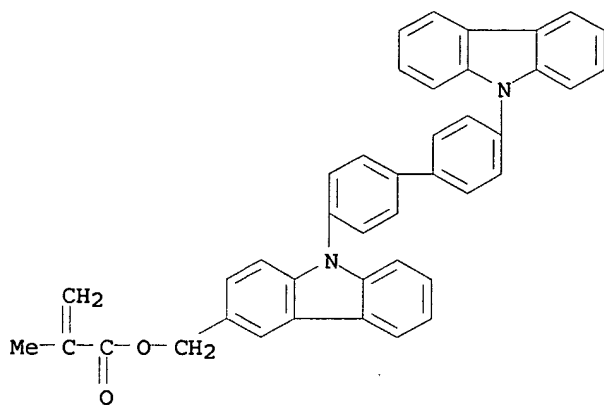
RN 852574-06-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-9H-carbazol-3-yl]methyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 852574-05-1

CMF C41 H30 N2 O2



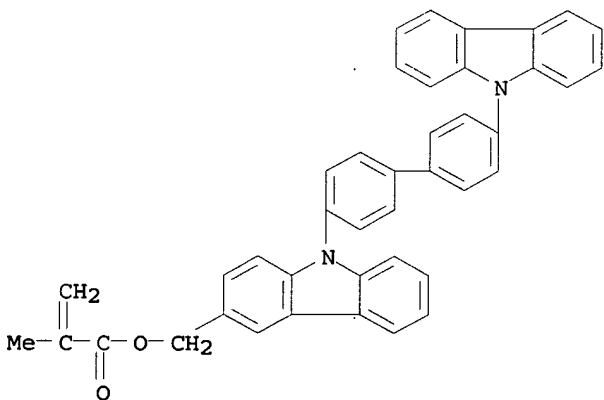
RN 852574-07-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-9H-carbazol-3-yl]methyl ester, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 852574-05-1

CMF C41 H30 N2 O2



CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH-Ph

IC ICM H05B033-14

ICS C08F020-34; C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 73

IT 58328-31-7P, 4,4'-Bis(carbazol-9-yl)biphenyl
728045-10-1P 757246-61-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)
(in prepn. of monomers; **phosphorescent** org. EL display panels having uniformly coated emission layers and showing high emission efficiency)

IT 852574-05-1P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(monomers; **phosphorescent** org. EL display panels having uniformly coated emission layers and showing high emission efficiency)

IT 852574-06-2P 852574-07-3P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP

(Preparation); USES (Uses)

(**phosphorescent** org. EL display panels having uniformly coated emission layers and showing high emission efficiency)

L35 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:453698 HCAPLUS

DOCUMENT NUMBER: 142:490164

TITLE: Full color organic electroluminescent device

INVENTOR(S): Ju, Sang-Hyun; Kim, Mu-Hyun; Kwon, Jang-Hyuk;
Kim, Sung-Chul; Chung, Ho-Kyoon; Chin,
Byung-Doo; Lee, Seong-Taek

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|---------------|------------------|----------|
| US 2005112403 | A1 | 20050526 | US 2004-938464 | 20040909 |
| JP 2005158676 | A2 | 20050616 | JP 2004-109132 | 20040401 |
| CN 1622721 | A | 20050601 | CN 2004-10085026 | 20041013 |
| PRIORITY APPLN. INFO.: | | KR 2003-84238 | A | 20031125 |

AB A full color org. electroluminescent device is described comprising a substrate; a first electrode formed on the substrate; an org. emitting layer formed on the first electrode, and having a red-emitting layer, a green-emitting layer and a blue-emitting layer, resp. patterned in a red pixel region, a green pixel region and a blue pixel region, wherein each of the red and green-emitting layers comprises a phosphorescent material and the blue-emitting layer comprises a fluorescent material; a hole blocking layer formed on the org. emitting layer as a common layer; and a second electrode formed on the hole blocking layer. The full color org. electroluminescent device may have enhanced lifetime and luminous efficiency characteristics.

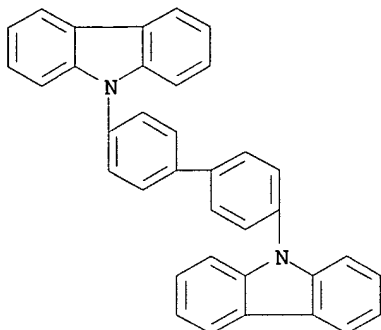
IT 58328-31-7, CBP

RL: DEV (Device component use); USES (Uses)

(red emitting layer; full color org. **electroluminescent** device using **phosphorescent** and fluorescent material)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



IC ICM H05B033-12
 INCL 428690000; 428917000; 313504000; 313506000; 257089000
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74, 76
 IT 58328-31-7, CBP
 RL: DEV (Device component use); USES (Uses)
 (red emitting layer; full color org. **electroluminescent** device using **phosphorescent** and fluorescent material)

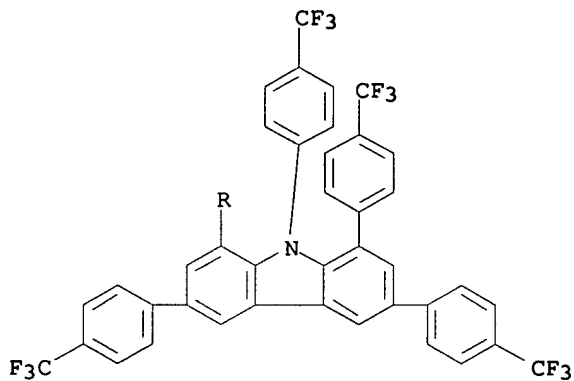
L35 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:302625 HCAPLUS
 DOCUMENT NUMBER: 142:363935
 TITLE: Blue-emitting organic electroluminescence elements with high brightness and long emission life, and displays and electric lights using them
 INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005093159 | A2 | 20050407 | JP 2003-322749 | 20030916 |
| PRIORITY APPLN. INFO.: | | | | 20030916 |

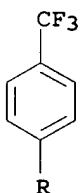
OTHER SOURCE(S): MARPAT 142:363935
 AB The electroluminescence (EL) elements have luminescent layers contg. host compds. and phosphorescence compds., wherein any layers consisting the elements contain ArRm(Ar1)(Ar2)(Ar3)(Ar4)(Ar5) [Ar = 5-membered arom. ring contg. ≥ 1 N (e.g., carbazole, pyrrole); Ar1-5 = aryl, heteroaryl; m ≥ 0 ; R = H, substituent].
 IT 849071-30-3 849071-31-4 849071-32-5
 849071-33-6 849071-34-7 849071-35-8
 849071-36-9 849071-37-0 849071-38-1
 RL: DEV (Device component use); USES (Uses)
 (blue-emitting org. EL devices with high brightness and long emission life using **phosphorescent** materials)
 RN 849071-30-3 HCAPLUS

CN 9H-Carbazole, 1,3,6,8,9-pentakis[4-(trifluoromethyl)phenyl]- (9CI)
(CA INDEX NAME)

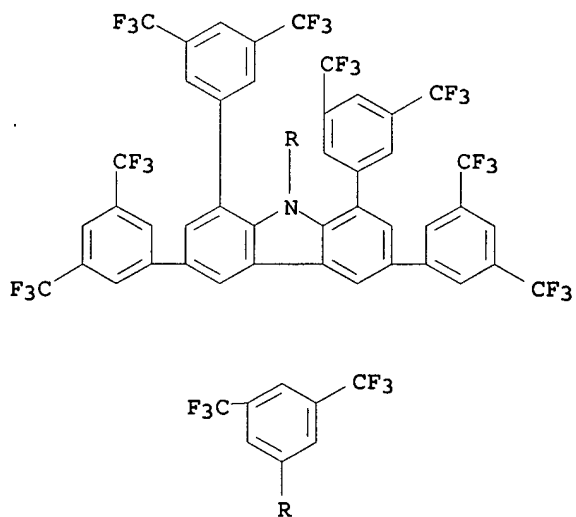
PAGE 1-A



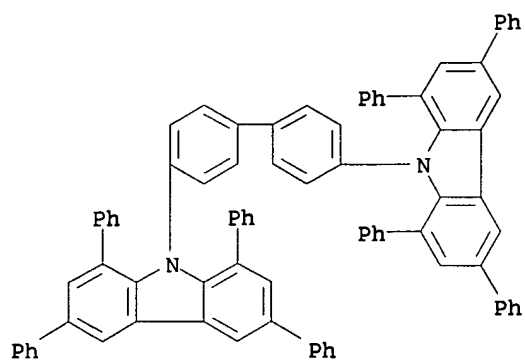
PAGE 2-A



RN 849071-31-4 HCAPLUS
CN 9H-Carbazole, 1,3,6,8,9-pentakis[3,5-bis(trifluoromethyl)phenyl]-
(9CI) (CA INDEX NAME)

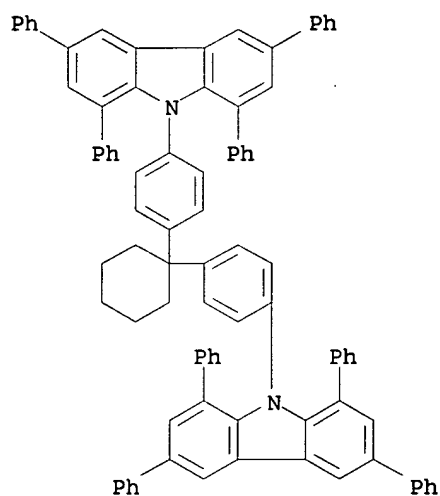


RN 849071-32-5 HCAPLUS
CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[1,3,6,8-tetraphenyl]-
(9CI) (CA INDEX NAME)



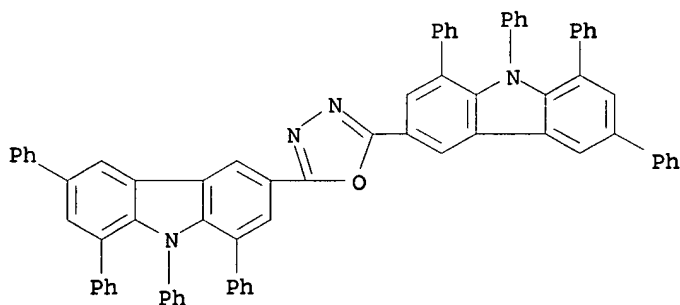
RN 849071-33-6 HCAPLUS

CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[1,3,6,8-tetraphenyl- (9CI) (CA INDEX NAME)



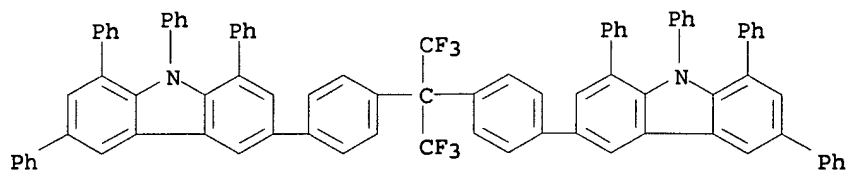
RN 849071-34-7 HCAPLUS

CN 9H-Carbazole, 3,3'-(1,3,4-oxadiazole-2,5-diyl)bis[1,6,8,9-tetraphenyl- (9CI) (CA INDEX NAME)

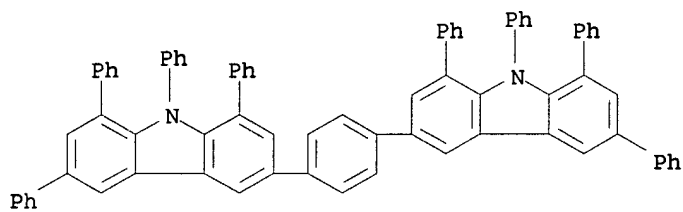


RN 849071-35-8 HCAPLUS

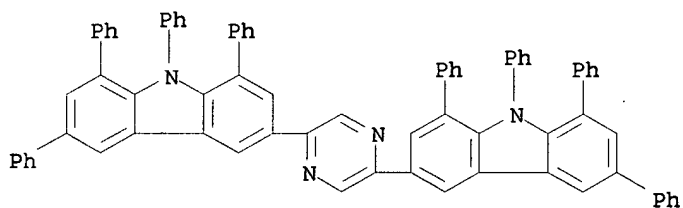
CN 9H-Carbazole, 3,3'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis[1,6,8,9-tetraphenyl- (9CI) (CA INDEX NAME)



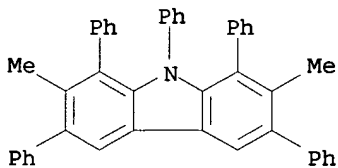
RN 849071-36-9 HCAPLUS
 CN 9H-Carbazole, 3,3'-(1,4-phenylene)bis[1,6,8,9-tetraphenyl]- (9CI)
 (CA INDEX NAME)



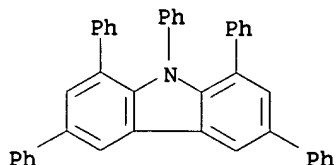
RN 849071-37-0 HCAPLUS
 CN 9H-Carbazole, 3,3'-(2,5-pyrazinediyl)bis[1,6,8,9-tetraphenyl]- (9CI)
 (CA INDEX NAME)



RN 849071-38-1 HCAPLUS
 CN 9H-Carbazole, 2,7-dimethyl-1,3,6,8,9-pentaphenyl- (9CI) (CA INDEX NAME)



IT **849071-28-9P**
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (blue-emitting org. EL devices with high brightness and long emission life using **phosphorescent** materials)
 RN 849071-28-9 HCAPLUS
 CN 9H-Carbazole, 1,3,6,8,9-pentaphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
ICS C09K011-06; H05B033-22
CC 74-13 (Radiation Chemistry, **Photochemistry**, and
Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 76
IT 849071-27-8 849071-29-0 849071-30-3 849071-31-4
849071-32-5 849071-33-6 849071-34-7
849071-35-8 849071-36-9 849071-37-0
849071-38-1
RL: DEV (Device component use); USES (Uses)
(blue-emitting org. EL devices with high brightness and long
emission life using **phosphorescent** materials)
IT 849071-28-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)
(blue-emitting org. EL devices with high brightness and long
emission life using **phosphorescent** materials)

L35 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:120330 HCAPLUS
DOCUMENT NUMBER: 142:207371
TITLE: Long-life organic electroluminescent devices,
lighting apparatus, and displays therewith
INVENTOR(S): Nakada, Yasunori; Suzurizato, Yoshiyuki; Kita,
Hiroshi
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

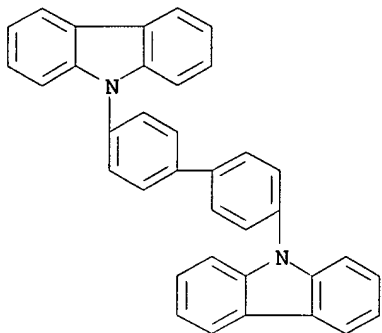
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005038672 | A2 | 20050210 | JP 2003-199073 | 20030718 |
| PRIORITY APPLN. INFO.: | | | | 20030718 |

AB The devices have, between anode layers and cathode layers, emitting layers wherein av. content of emitting materials are smaller in the 30-vol% regions in either the cathode or the anode side than that in the remaining regions. The emitting materials may be hole- or electron-transporting (phosphorescent) dopants. The devices suppress generation of triplet-triplet extinction that leads to biased recombination in the emitting layers.

IT 58328-31-7, CBP 697312-13-3
RL: DEV (Device component use); USES (Uses)
(**phosphorescent** compd.-doped, emitting layers;
long-life org. LED contg. **phosphorescent** dopants in
nonuniform distribution for LCD)

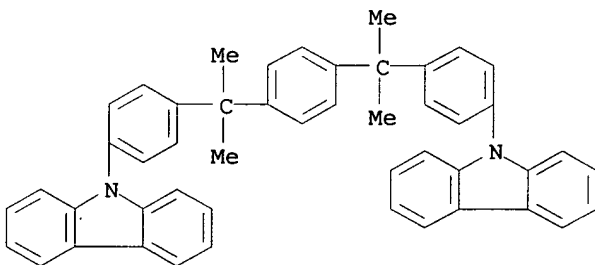
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 697312-13-3 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,4-phenylenebis[(1-methylethylidene)-4,1-phenylene]]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 58328-31-7, CBP 697312-13-3

RL: DEV (Device component use); USES (Uses)

(phosphorescent compd.-doped, emitting layers;
long-life org. LED contg. phosphorescent dopants in
nonuniform distribution for LCD)

L35 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:34313 HCAPLUS

DOCUMENT NUMBER: 142:103508

TITLE: Organic light emitting device structure for obtaining chromaticity stability

INVENTOR(S): Tung, Yeh-Jiun; Ngo, Tan

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 36 pp., Cont.-in-part of U.S. Ser. No. 618,160.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|------|
| US 2005006642 | A1 | 20050113 | US 2004-761980 | |

US 2005006641 A1 20050113 US 2003-618160 200401
20
200307
10
US 6885025 B2 20050426
PRIORITY APPLN. INFO.: US 2003-618160 A2
200307
10

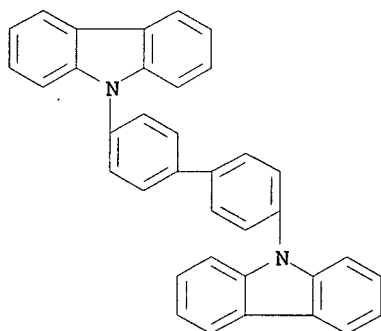
AB An org. light emitting device is described comprising an anode; an emissive region; and a cathode, wherein the emissive region comprises a first emissive layer, comprising a first host material and a first emissive material, and a second emissive layer in phys. contact with the first emissive layer and comprising a second host material and a second emissive material, and wherein: the first emissive layer is nearer to the anode than the second emissive layer, and at least one of the first emissive material or the second emissive material is a phosphorescent emissive material.

IT 58328-31-7, CBP 550378-78-4

RL: DEV (Device component use); USES (Uses)
(light emitting device contg.; org. light emitting device structures using phosphorescent phosphor for obtaining chromaticity stability)

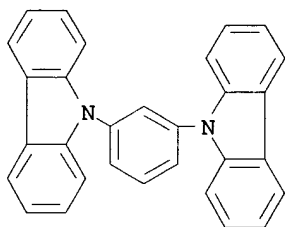
RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 550378-78-4 HCAPLUS

CN 9H-Carbazole, 9,9'-(1,3-phenylene)bis- (9CI) (CA INDEX NAME)



IC ICM H01L035-24

INCL 257040000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 76

IT 147-14-8, Copper phthalocyanine. 1662-01-7, 4,7-Diphenyl-1,10-phenanthroline 2085-33-8, Alq3 19205-19-7, N,N'-

Dimethylquinacridone 29261-33-4, Tetrafluoro-tetracyano-quinodimethane 50851-57-5 50926-11-9, Indium tin oxide 51325-91-8, DCM 58328-31-7, CBP 80730-94-5 123847-85-8, NPD 124729-98-2 126213-51-2, Poly(3,4-ethylenedioxythiophene) 146162-54-1 150405-69-9, TAZ 192198-85-9, TPBi 550378-78-4

RL: DEV (Device component use); USES (Uses)
(light emitting device contg.; org. light emitting device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

L35 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:34312 HCAPLUS

DOCUMENT NUMBER: 142:103507

TITLE: Organic light emitting device structures for obtaining chromaticity stability

INVENTOR(S): Tung, Yeh-Jiun; Lu, Michael; Kwong, Raymond C.

PATENT ASSIGNEE(S): Universal Display Corporation, USA

SOURCE: U.S. Pat. Appl. Publ., 30 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| ----- | ---- | ----- | ----- | |
| US 2005006641 | A1 | 20050113 | US 2003-618160 | 20030710 |
| US 6885025 | B2 | 20050426 | | |
| US 2005006642 | A1 | 20050113 | US 2004-761980 | 20040120 |
| PRIORITY APPLN. INFO.: | | | US 2003-618160 | A2 20030710 |

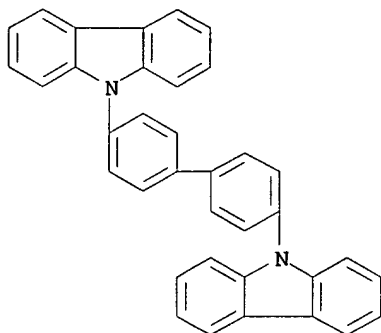
AB An org. light emitting device is described comprising an emissive region disposed between and elec. connected to an anode and a cathode, wherein the emissive region comprises: a first emissive layer, comprising a first host material and a first emissive material, and a second emissive layer in phys. contact with the first emissive layer and comprising a second host material and a second emissive material, and wherein the contact between the first emissive layer and the second emissive layer provides an electron injection barrier, a hole injection barrier, or both, the first emissive layer is nearer to the anode than the second emissive layer, at least one of the first emissive material or the second emissive material is a phosphorescent emissive material, and wherein the device emits with CIE x,y-coordinates that vary <.apprx.0.04 over the luminance range of about 1000 cd/m2 to about 20,000 cd/m2.

IT 58328-31-7, CBP 550378-78-4

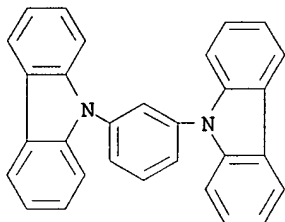
RL: DEV (Device component use); USES (Uses)
(light emitting device contg.; org. light emitting device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 550378-78-4 HCAPLUS
 CN 9H-Carbazole, 9,9'-(1,3-phenylene)bis- (9CI) (CA INDEX NAME)



IC ICM H01L051-00
 INCL 257040000
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73, 76
 IT 147-14-8, Copper phthalocyanine. 1662-01-7, 4,7-Diphenyl-1,10-
 phenanthroline 2085-33-8, Alq3 19205-19-7, N,N'-
 Dimethylquinacridone 29261-33-4, Tetrafluoro-tetracyano-
 quinodimethane 50851-57-5 50926-11-9, Indium tin oxide
 51325-91-8, DCM 58328-31-7, CBP 123847-85-8, NPD
 124729-98-2 126213-51-2, Poly(3,4-ethylenedioxythiophene)
 146162-54-1 150405-69-9, TAZ 192198-85-9, TPBi
 550378-78-4

RL: DEV (Device component use); USES (Uses)
 (light emitting device contg.; org. light emitting device
 structures using **phosphorescent** phosphor for obtaining
 chromaticity stability)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L35 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:842712 HCAPLUS

DOCUMENT NUMBER: 141:340072

TITLE: White-emitting organic electroluminescent device
 with high emission efficiency and long service
 life and its display and illumination

INVENTOR(S): Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

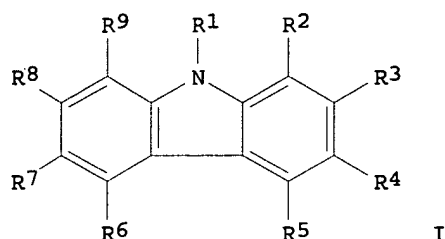
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| ----- | --- | ----- | ----- | |
| JP 2004288381 | A2 | 20041014 | JP 2003-75512 | 20030319 |
| PRIORITY APPLN. INFO.: | | | JP 2003-75512 | 20030319 |

OTHER SOURCE(S): MARPAT 141:340072
GI

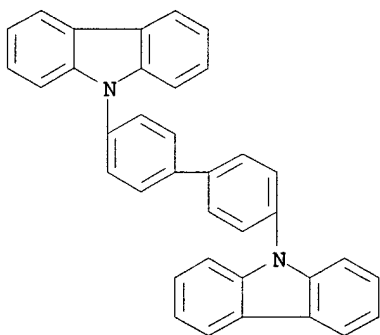


AB The org. EL device contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-contg. aryl; when R1 = H or substituent, ≥1 of R2-R9 = F or F-contg. aryl and other R2-R9 = H or substituent; when R1 = F-contg. aryl, R2-R9 = H or substituent). The org. EL device will contain I and phosphorescent dopants in the light-emitting layer.

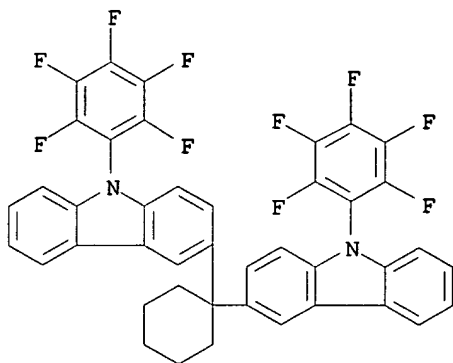
IT 58328-31-7 773150-28-0 773150-29-1
773150-30-4 773150-31-5 773150-32-6
773150-33-7 773150-35-9 773150-36-0
773150-37-1 773150-38-2 773150-39-3
773150-40-6 773150-41-7 773150-42-8
773150-43-9

RL: DEV (Device component use); USES (Uses)
(white-emitting org. EL device contg. carbazol derivs. as hosts for phosphorescent dopants for display and illumination)

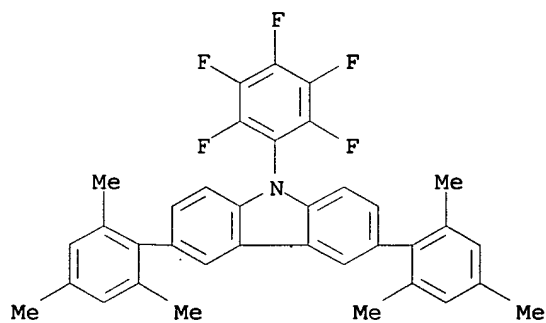
RN 58328-31-7 HCAPLUS
CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



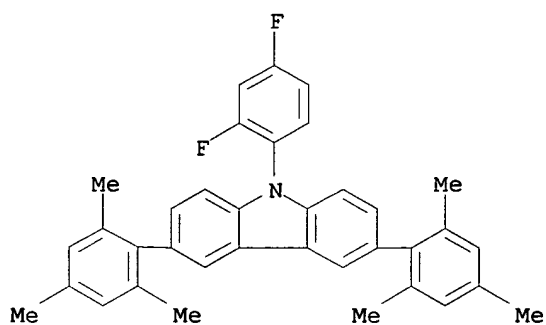
RN 773150-28-0 HCAPLUS
CN 9H-Carbazole, 3,3'-cyclohexylidenebis[9-(pentafluorophenyl)- (9CI)
(CA INDEX NAME)



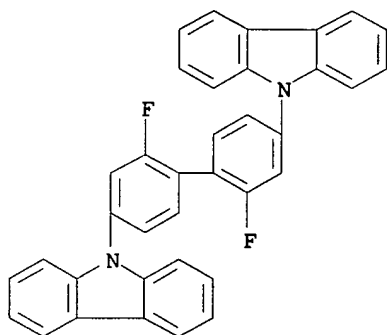
RN 773150-29-1 HCAPLUS
 CN 9H-Carbazole, 9-(pentafluorophenyl)-3,6-bis(2,4,6-trimethylphenyl)-
 (9CI) (CA INDEX NAME)



RN 773150-30-4 HCAPLUS
 CN 9H-Carbazole, 9-(2,4-difluorophenyl)-3,6-bis(2,4,6-trimethylphenyl)-
 (9CI) (CA INDEX NAME)

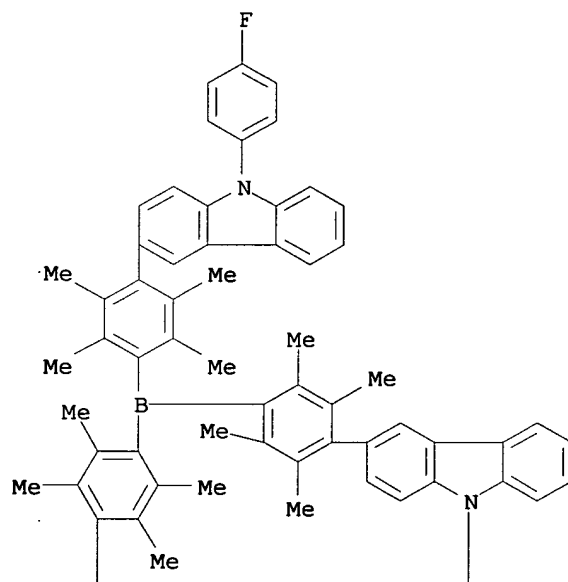


RN 773150-31-5 HCAPLUS
 CN 9H-Carbazole, 9,9'-(2,2'-difluoro[1,1'-biphenyl]-4,4'-diyl)bis-
 (9CI) (CA INDEX NAME)

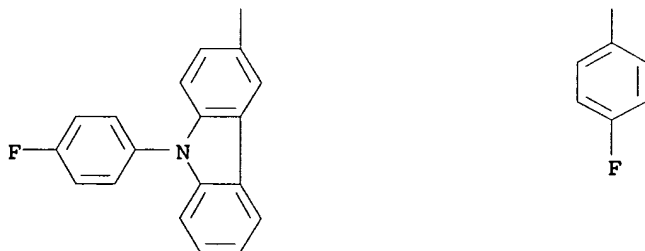


RN 773150-32-6 HCAPLUS
 CN 9H-Carbazole, 3,3',3''-[borylidynetris(2,3,5,6-tetramethyl-4,1-phenylene)]tris[9-(4-fluorophenyl)- (9CI) (CA INDEX NAME)]

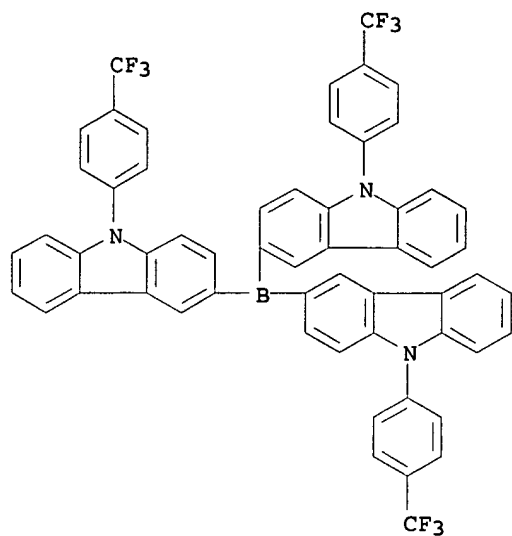
PAGE 1-A



PAGE 2-A

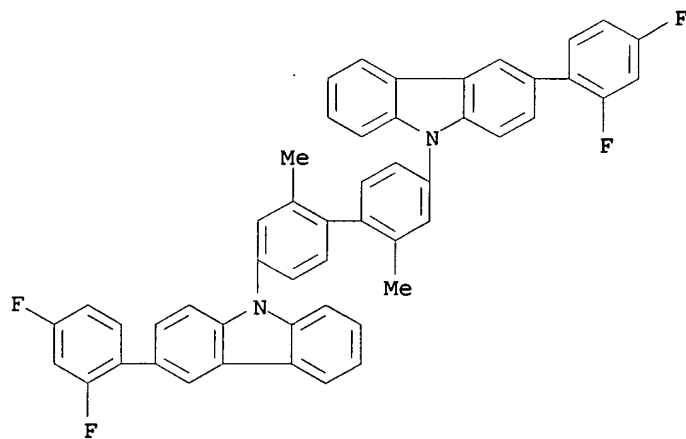


RN 773150-33-7 HCAPLUS
 CN 9H-Carbazole, 3,3',3''-[borylidynetris[9-[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)]]



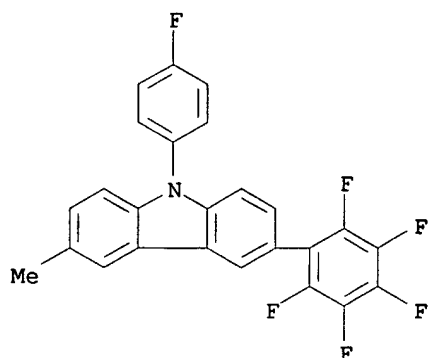
RN 773150-35-9 HCAPLUS

CN 9H-Carbazole, 9,9'-(2,2'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis[3-(2,4-difluorophenyl)- (9CI) (CA INDEX NAME)

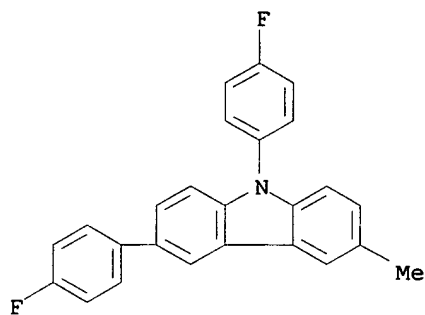


RN 773150-36-0 HCAPLUS

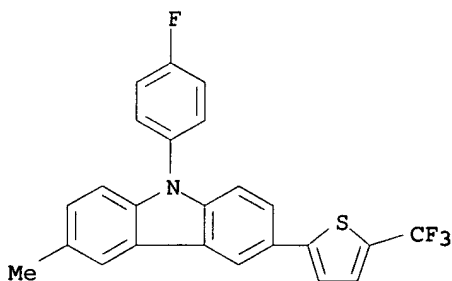
CN 9H-Carbazole, 9-(4-fluorophenyl)-3-methyl-6-(pentafluorophenyl)- (9CI) (CA INDEX NAME)



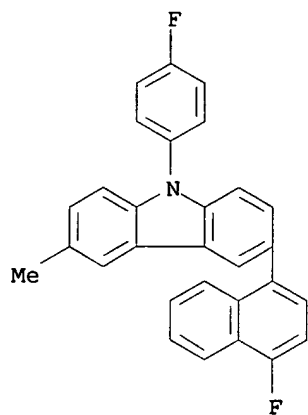
RN 773150-37-1 HCAPLUS
 CN 9H-Carbazole, 3,9-bis(4-fluorophenyl)-6-methyl- (9CI) (CA INDEX NAME)



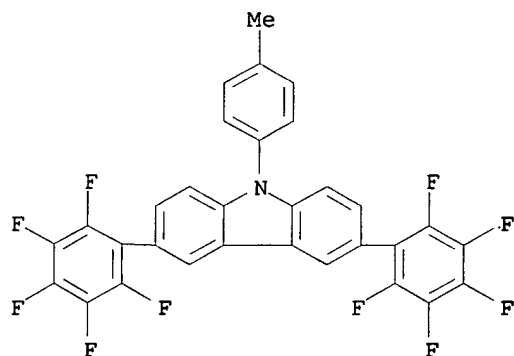
RN 773150-38-2 HCAPLUS
 CN 9H-Carbazole, 9-(4-fluorophenyl)-3-methyl-6-[5-(trifluoromethyl)-2-thienyl]- (9CI) (CA INDEX NAME)



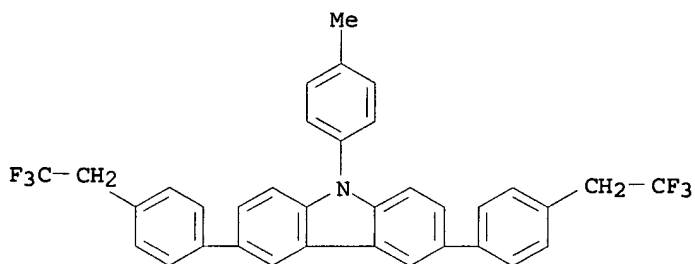
RN 773150-39-3 HCAPLUS
 CN 9H-Carbazole, 3-(4-fluoro-1-naphthalenyl)-9-(4-fluorophenyl)-6-methyl- (9CI) (CA INDEX NAME)



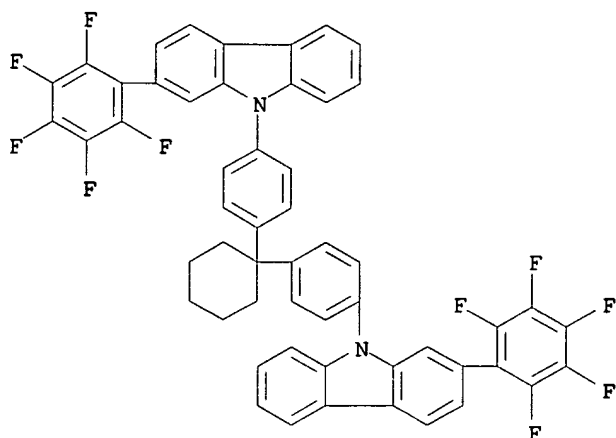
RN 773150-40-6 HCAPLUS
 CN 9H-Carbazole, 9-(4-methylphenyl)-3,6-bis(pentafluorophenyl)- (9CI)
 (CA INDEX NAME)



RN 773150-41-7 HCAPLUS
 CN 9H-Carbazole, 9-(4-methylphenyl)-3,6-bis[4-(2,2,2-trifluoroethyl)phenyl]- (9CI) (CA INDEX NAME)

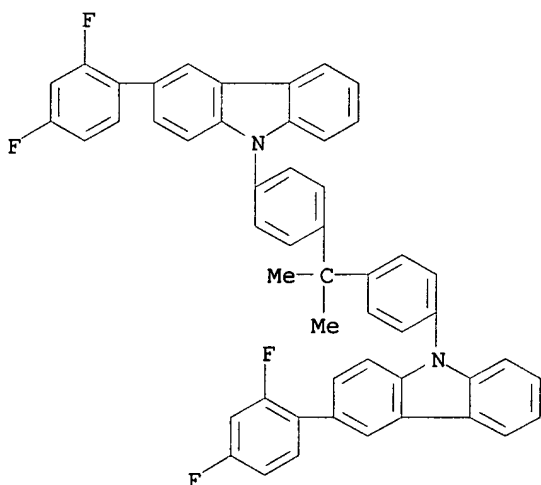


RN 773150-42-8 HCAPLUS
 CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[2-(pentafluorophenyl)- (9CI) (CA INDEX NAME)



RN 773150-43-9 HCAPLUS

CN 9H-Carbazole, 9,9'-[(1-methylethylidene)di-4,1-phenylene]bis[3-(2,4-difluorophenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6
123847-85-8 343978-79-0 376367-93-0 405171-87-1

773150-28-0 773150-29-1 773150-30-4

773150-31-5 773150-32-6 773150-33-7

773150-34-8 773150-35-9 773150-36-0

773150-37-1 773150-38-2 773150-39-3

773150-40-6 773150-41-7 773150-42-8

773150-43-9

RL: DEV (Device component use); USES (Uses)

(white-emitting org. EL device contg. carbazol derivs. as hosts
for phosphorescent dopants for display and
illumination)

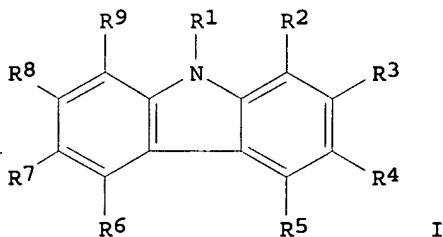
L35 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:842711 HCAPLUS

DOCUMENT NUMBER: 141:340137
 TITLE: White-emitting organic electroluminescent device
 with high emission efficiency and long service
 life and its display and illumination
 INVENTOR(S): Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2004288380 | A2 | 20041014 | JP 2003-75511 | 20030319 |
| PRIORITY APPLN. INFO.: | | | | 20030319 |

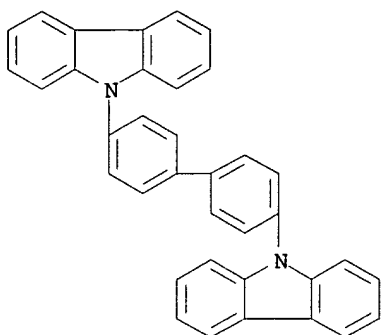
OTHER SOURCE(S): MARPAT 141:340137
 GI



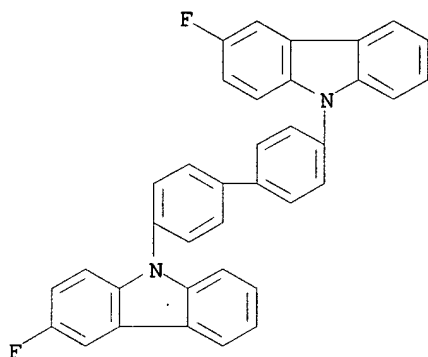
AB The org. EL device contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-contg. alkyl; when R1 = H or substituent, ≥1 of R2-R9 = F or F-contg. alkyl and other R2-R9 = H or substituent; when R1 = F-contg. alkyl, R2-R9 = H or substituent). The org. EL device will contain I and phosphorescent dopants in the light-emitting layer.

IT 58328-31-7 602331-44-2 773156-59-5
 773156-60-8 773156-61-9 773156-62-0
 773156-63-1 773156-64-2
 RL: DEV (Device component use); USES (Uses)
 (white-emitting org. EL device contg. carbazol derivs. as hosts for phosphorescent dopants for display and illumination)

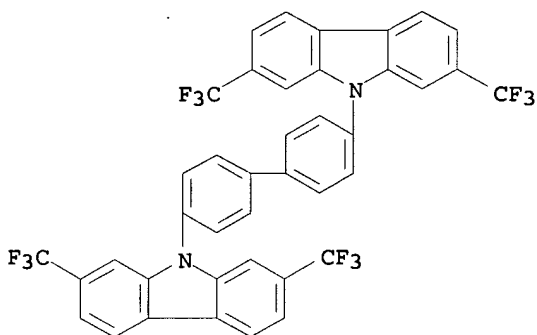
RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



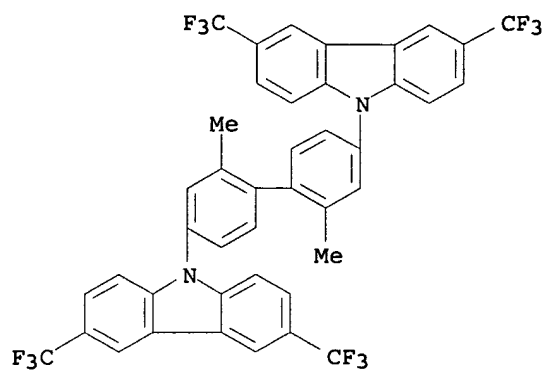
RN 602331-44-2 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[3-fluoro- (9CI) (CA INDEX NAME)



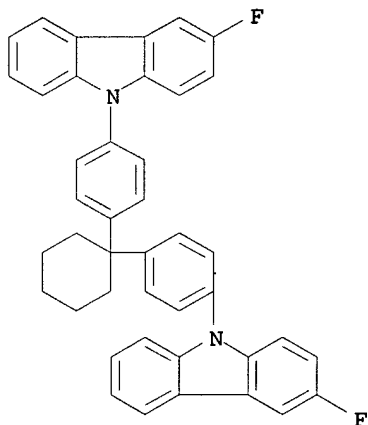
RN 773156-59-5 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[2,7-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



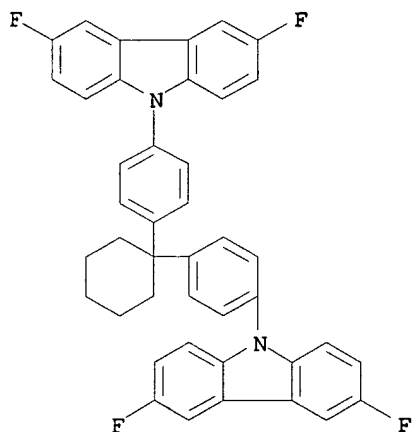
RN 773156-60-8 HCAPLUS
 CN 9H-Carbazole, 9,9'-[2,2'-dimethyl[1,1'-biphenyl]-4,4'-diyl]bis[3,6-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 773156-61-9 HCAPLUS

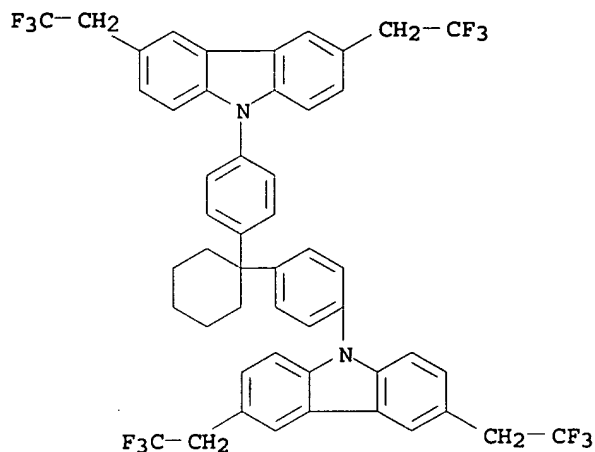
CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[3-fluoro-
(9CI) (CA INDEX NAME)

RN 773156-62-0 HCAPLUS

CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[3,6-difluoro-
(9CI) (CA INDEX NAME)

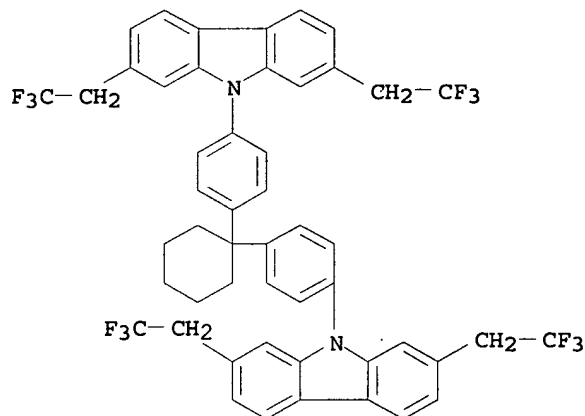
RN 773156-63-1 HCAPLUS

CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[3,6-bis(2,2,2-trifluoroethyl)- (9CI) (CA INDEX NAME)



RN 773156-64-2 HCAPLUS

CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis[2,7-bis(2,2,2-trifluoroethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 2085-33-8, Alq3 4733-39-5 **58328-31-7** 94928-86-6
 123847-85-8 344796-22-1 376367-93-0 405171-87-1
602331-44-2 773156-50-6 773156-51-7 773156-52-8
 773156-53-9 773156-54-0 773156-55-1 773156-56-2 773156-57-3
 773156-58-4 **773156-59-5** **773156-60-8**
773156-61-9 **773156-62-0** **773156-63-1**
773156-64-2

RL: DEV (Device component use); USES (Uses)

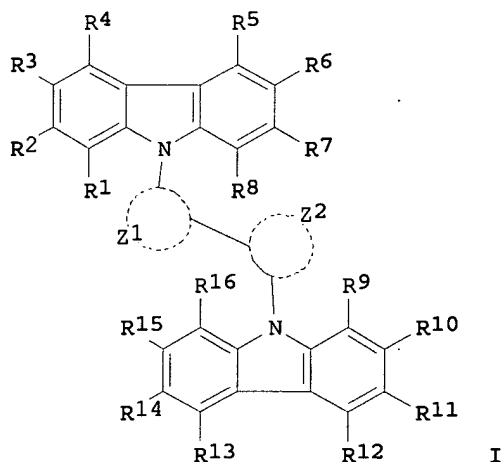
(white-emitting org. EL device contg. carbazol derivs. as hosts for phosphorescent dopants for display and illumination)

L35 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

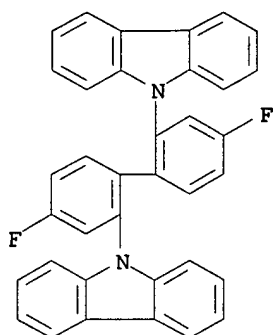
ACCESSION NUMBER: 2004:798851 HCAPLUS
 DOCUMENT NUMBER: 141:304397
 TITLE: Organic electroluminescent devices with high luminescence intensity and efficiency for displays and light sources
 INVENTOR(S): Oshiyama, Tomohiro; Yamada, Taketoshi; Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2004273190 | A2 | 20040930 | JP 2003-59755 | 20030306 |
| PRIORITY APPLN. INFO.: | | | | 20030306 |

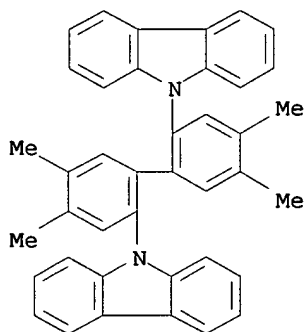
OTHER SOURCE(S): MARPAT 141:304397
 GI



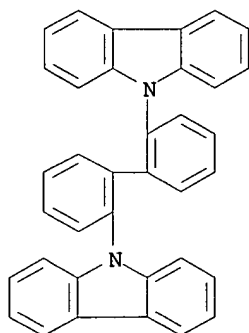
AB The org. electroluminescent (EL) devices, esp., blue-emitting EL, contain carbazole derivs. I (Z1, Z2 = at. group for forming arom. rings; R1-R16 = H, monovalent substituent). The devices contg. the carbazole compds. and several phosphorescent dopants emit white light.
 IT 763654-24-6 763654-35-9
 RL: DEV (Device component use); USES (Uses)
 (emitter layer; org. electroluminescent devices contg. specific carbazole derivs. and phosphorescent compds.)
 RN 763654-24-6 HCAPLUS
 CN 9H-Carbazole, 9,9'-(4,4'-difluoro[1,1'-biphenyl]-2,2'-diyl)bis-
 (9CI) (CA INDEX NAME)



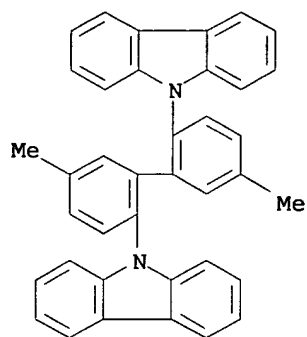
RN 763654-35-9 HCAPLUS
 CN 9H-Carbazole, 9,9'-(4,4',5,5'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis- (9CI) (CA INDEX NAME)



IT 592551-54-7P 763653-89-0P
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (emitter layer; org. **electroluminescent** devices contg. specific carbazole derivs. and **phosphorescent** compds.)
 RN 592551-54-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-(5,5'-dimethyl[1,1'-biphenyl]-2,2'-diyl)bis- (9CI) (CA INDEX NAME)



RN 763653-89-0 HCAPLUS
 CN 9H-Carbazole, 9,9'-(5,5'-dimethyl[1,1'-biphenyl]-2,2'-diyl)bis- (9CI) (CA INDEX NAME)

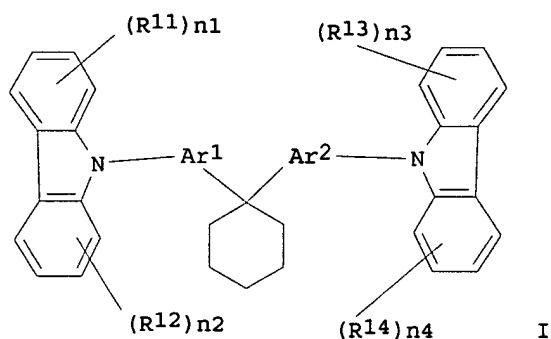


IC ICM H05B033-14
 ICS C07D209-80; C09K011-06; H05B033-22
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 28, 73
 IT 763653-96-9 **763654-24-6** 763654-29-1 **763654-35-9**
 RL: DEV (Device component use); USES (Uses)
 (emitter layer; org. **electroluminescent** devices contg.
 specific carbazole derivs. and **phosphorescent** compds.)
 IT **592551-54-7P** **763653-89-0P**
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (emitter layer; org. **electroluminescent** devices contg.
 specific carbazole derivs. and **phosphorescent** compds.)

L35 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:674987 HCAPLUS
 DOCUMENT NUMBER: 141:197443
 TITLE: Organic electroluminescent devices/displays
 INVENTOR(S): Oshiyama, Tomohiro; Suzurizato, Yoshiyuki; Kita,
 Hiroshi; Kinoshita, Motoshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2004234952 | A2 | 20040819 | JP 2003-20334 | 200301 29 |
| PRIORITY APPLN. INFO.: | | | JP 2003-20334 | 200301 29 |

OTHER SOURCE(S): MARPAT 141:197443
 GI



AB The devices have (i) emitting layers contg. compds. I [R11-R14 = H, substituent; Ar1, Ar2 = bivalent arom. (hetero)cyclic hydrocarbylene; n1-n4 = 0-4] and phosphorescent compds. (e.g., Os complexes, Ir complexes, or Pt complexes) and, between the emitting layers and cathodes, (ii) hole-blocking layers contg. compds. with phosphorescence wavelength 300-460 nm (e.g., triazoles, oxadiazoles, B derivs.).

IT 607731-61-3 738597-17-6 738597-18-7

RL: DEV (Device component use); USES (Uses)

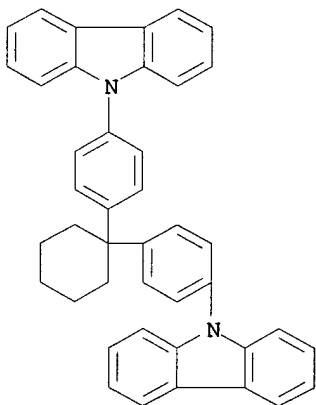
(hole-blocking layers; org. EL displays contg.

phosphorescent compd.-doped prescribed carbazole derivs.

and showing high luminescent efficiency)

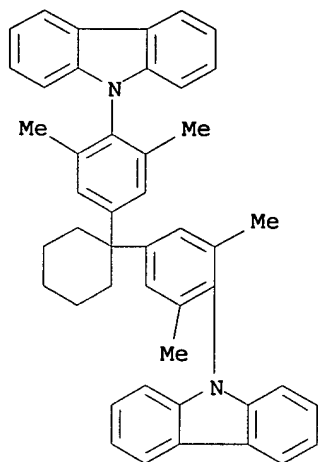
RN 607731-61-3 HCAPLUS

CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-4,1-phenylene)bis- (9CI) (CA INDEX NAME)

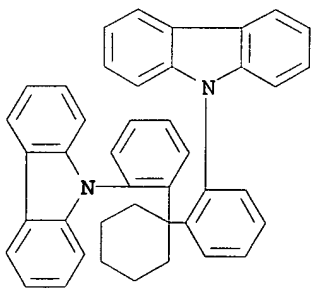


RN 738597-17-6 HCAPLUS

CN 9H-Carbazole, 9,9'-[cyclohexylidenebis(2,6-dimethyl-4,1-phenylene)]bis- (9CI) (CA INDEX NAME)



RN 738597-18-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-(cyclohexylidenedi-2,1-phenylene)bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
 ICS C09K011-06; H05B033-22
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and
 Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 IT 607731-61-3 738597-17-6 738597-18-7
 RL: DEV (Device component use); USES (Uses)
 (hole-blocking layers; org. EL displays contg.
phosphorescent compd.-doped prescribed carbazole derivs.
 and showing high **luminescent** efficiency)

L35 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:530380 HCAPLUS
 DOCUMENT NUMBER: 141:96344
 TITLE: Organic electroluminescent device for displays
 and illumination source and its production
 method
 INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Suzurizato,
 Yoshiyuki; Ueda, Noriko
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 65 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2004185967 | A2 | 20040702 | JP 2002-351157 | 20021203 |
| PRIORITY APPLN. INFO.: | | | JP 2002-351157 | 20021203 |

AB The invention relates to an org. electroluminescent device comprising a light-emitting layer contg. a phosphorescent dopant and a multifunctioning polymer, wherein, at least, the two of functional mol. units selected from a luminescent host unit, a hole transporting unit, and an electron transporting unit constitute the multifunctioning polymer.

IT 714976-02-0 714976-05-3 714976-08-6
 714976-11-1 714976-13-3 714976-16-6
 714976-18-8 714976-21-3 714976-25-7
 714976-27-9 714976-29-1 714976-31-5
 714976-35-9 714976-38-2

RL: DEV (Device component use); USES (Uses)
 (org. electroluminescent device having
 phosphorescent dopant and multifunctioning polymer in
 light emitting layer)

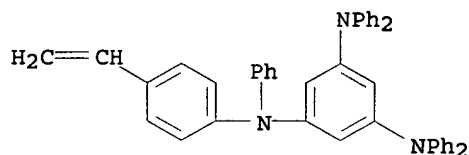
RN 714976-02-0 HCAPLUS

CN 1,3,5-Benzenetriamine, N-(4-ethenylphenyl)-N,N',N',N'',N''-
 pentaphenyl-, polymer with 9-(4-ethenylphenyl)-9H-carbazole (9CI)
 (CA INDEX NAME)

CM 1

CRN 714976-01-9

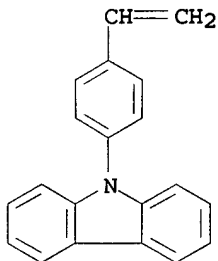
CMF C44 H35 N3



CM 2

CRN 52913-19-6

CMF C20 H15 N



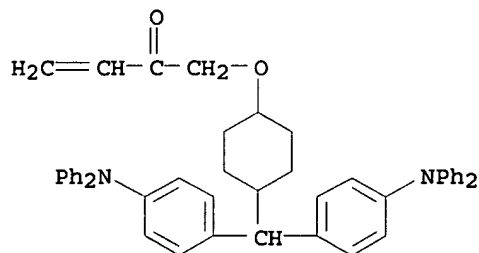
RN 714976-05-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 4-[bis[4-(9H-carbazol-9-yl)phenyl]methyl]-1-methylcyclohexyl ester, polymer with

1-[[4-[bis[4-(diphenylamino)phenyl]methyl]cyclohexyl]oxy]-3-buten-2-one (9CI) (CA INDEX NAME)

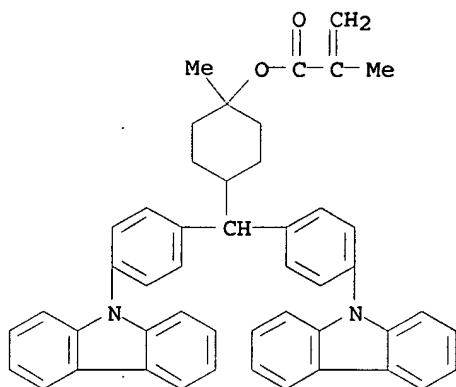
CM 1

CRN 714976-04-2
CMF C47 H44 N2 O2



CM 2

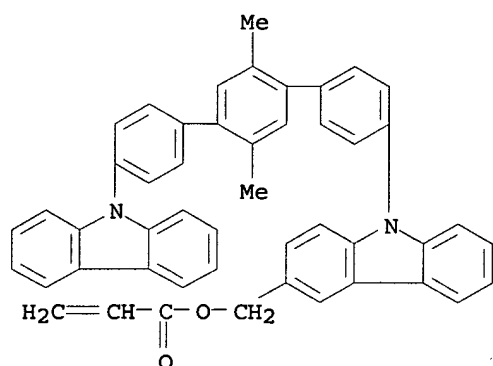
CRN 714976-03-1
CMF C48 H42 N2 O2



RN 714976-08-6 HCAPLUS
CN 2-Propenoic acid, [9-[4'-(9H-carbazol-9-yl)-2',5'-dimethyl[1,1':4',1''-terphenyl]-4-yl]-9H-carbazol-3-yl]methyl ester, polymer with [4-[[4'-(diphenylamino)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]phenylamino]phenyl]methyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

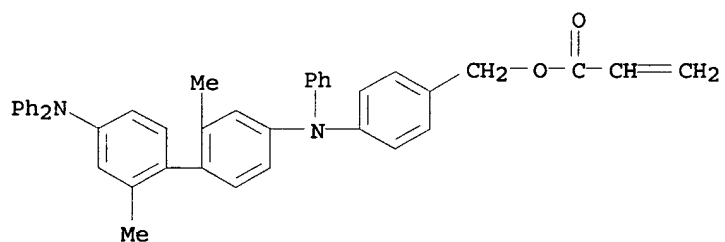
CRN 714976-07-5
CMF C48 H36 N2 O2



CM 2

CRN 714976-06-4

CMF C42 H36 N2 O2



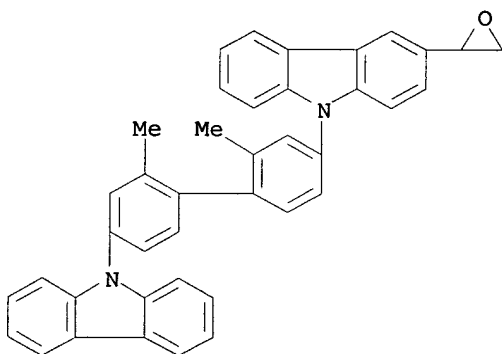
RN 714976-11-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, 2,2'-dimethyl-N,N'-bis(3-methylphenyl)-N-(4-oxiranylphenyl)-N'-phenyl-, polymer with 9-[4'-(9H-carbazol-9-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-3-oxiranyl-9H-carbazole (9CI)
(CA INDEX NAME)

CM 1

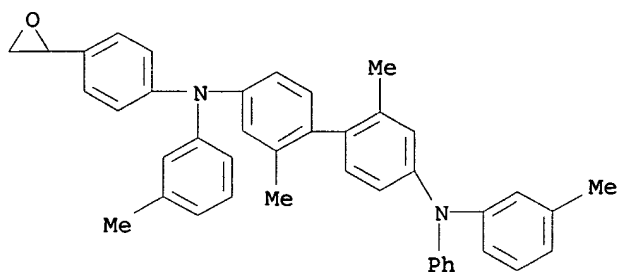
CRN 714976-10-0

CMF C40 H30 N2 O



CM 2

CRN 714976-09-7
CMF C42 H38 N2 O

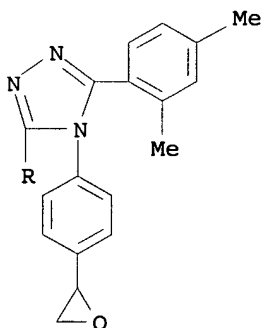


RN 714976-13-3 HCAPLUS
CN 9H-Carbazole, 9-[4'-(9H-carbazol-9-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-3-oxiranyl-, polymer with 3,5-bis(2,4-dimethylphenyl)-4-(4-oxiranylphenyl)-4H-1,2,4-triazole (9CI) (CA INDEX NAME)

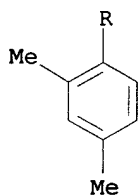
CM 1

CRN 714976-12-2
CMF C26 H25 N3 O

PAGE 1-A

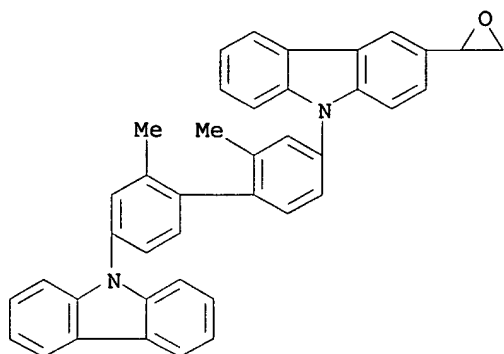


PAGE 2-A



CM 2

CRN 714976-10-0
CMF C40 H30 N2 O

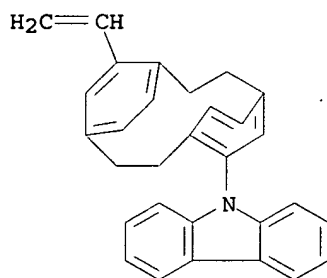


RN 714976-16-6 HCAPLUS
 CN 9H-Carbazole, 9-(11-ethenyltricyclo[8.2.2.2.4,7]hexadeca-4,6,10,12,13,15-hexaen-5-yl)-, polymer with 3,5-bis(2,5-dimethylphenyl)-4-(4-ethenylphenyl)-4H-1,2,4-triazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-15-5

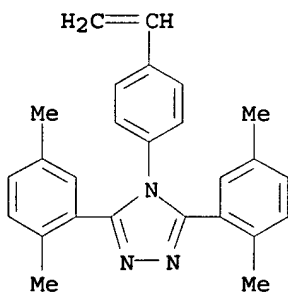
CMF C30 H25 N



CM 2

CRN 714976-14-4

CMF C26 H25 N3



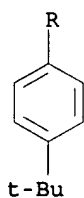
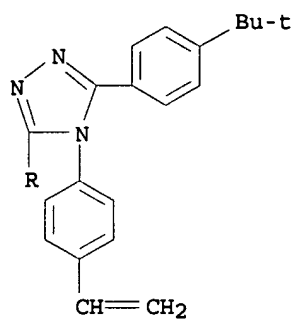
RN 714976-18-8 HCAPLUS
 CN [1,1'-Biphenyl]-4,4'-diamine, 2,2'-dimethyl-N,N'-di-1-naphthalenyl-N,N'-diphenyl-, polymer with 3,5-bis[4-(1,1-dimethylethyl)phenyl]-4-(4-ethenylphenyl)-4H-1,2,4-triazole and 9-(4-ethenylphenyl)-9H-

carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-17-7

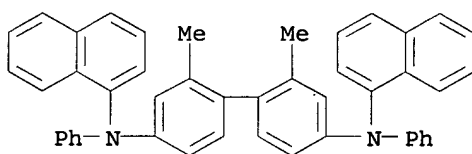
CMF C30 H33 N3



CM 2

CRN 495416-60-9

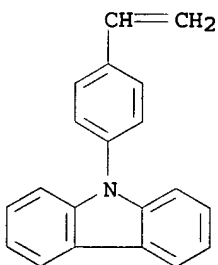
CMF C46 H36 N2



CM 3

CRN 52913-19-6

CMF C20 H15 N

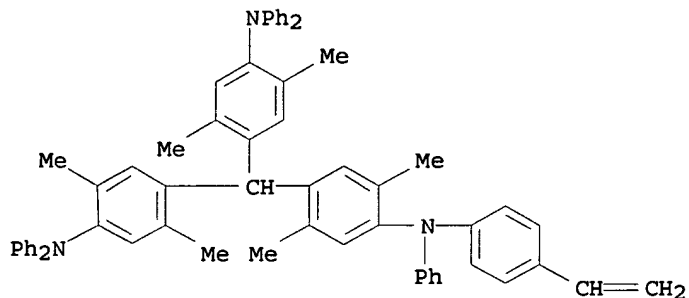


RN 714976-21-3 HCAPLUS
 CN Benzenamine, 4,4'-[[4-[(4-ethenylphenyl)phenylamino]-2,5-dimethylphenyl)methylene]bis[2,5-dimethyl-N,N-diphenyl-, polymer with 3,5-bis(2,5-dimethylphenyl)-4-(4-ethenylphenyl)-4H-1,2,4-triazole and 9-(4-ethenylphenyl)-3,6-bis(2,4,6-trimethylphenyl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-20-2

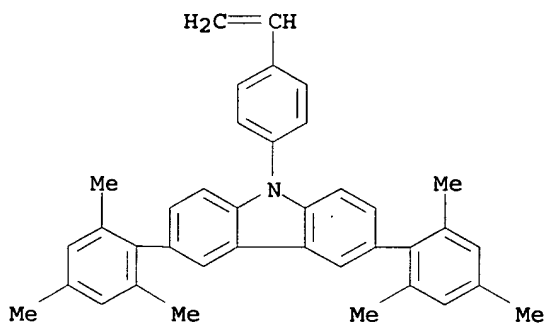
CMF C63 H57 N3



CM 2

CRN 714976-19-9

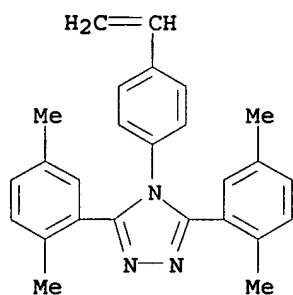
CMF C38 H35 N



CM 3

CRN 714976-14-4

CMF C26 H25 N3



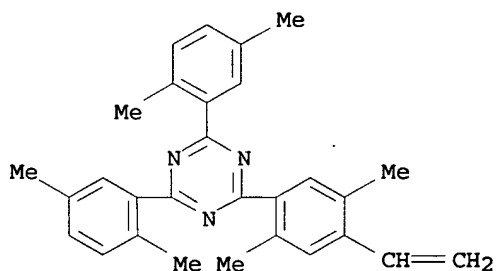
RN 714976-25-7 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4'-ethenyl-2,2'-dimethyl[1,1'-biphenyl]-4-yl)-2,2'-dimethyl-, polymer with 2,4-bis(2,5-dimethylphenyl)-6-(4-ethenyl-2,5-dimethylphenyl)-1,3,5-triazine and 9-[4'-(9H-carbazol-9-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-24-6

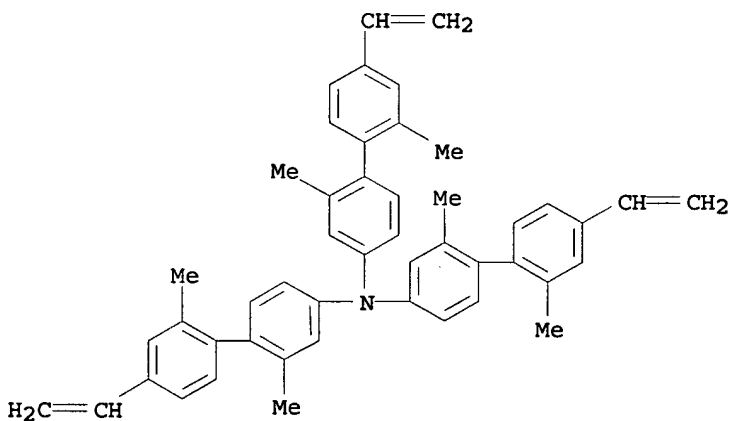
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CM 2

CRN 714976-23-5

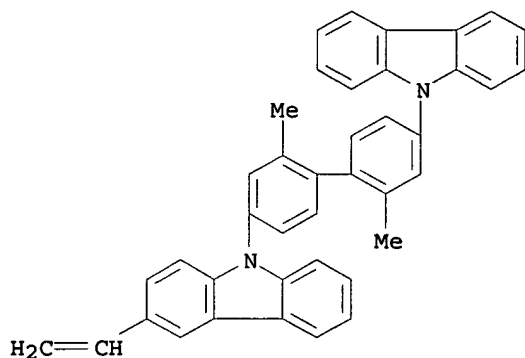
CMF C48 H45 N



CM 3

CRN 714976-22-4

CMF C40 H30 N2



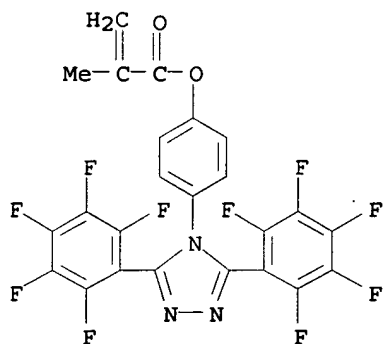
RN 714976-27-9 HCAPLUS

CM 2-Propenoic acid, 2-methyl-, 4-[bis[4-(9H-carbazol-9-yl)phenyl]methyl]-1-methylcyclohexyl ester, polymer with 1-[[4-[bis[4-(diphenylamino)phenyl]methyl]cyclohexyl]oxy]-3-buten-2-one and 4-[3,5-bis(pentafluorophenyl)-4H-1,2,4-triazol-4-yl]phenyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 714976-26-8

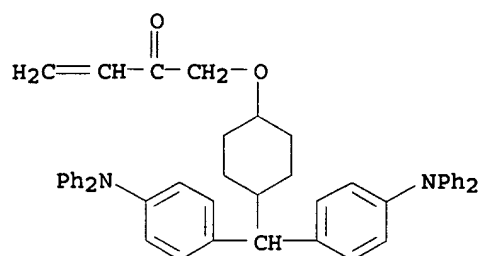
CMF C24 H9 F10 N3 O2



CM 2

CRN 714976-04-2

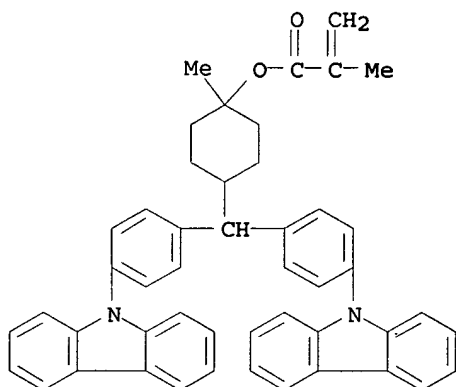
CMF C47 H44 N2 O2



CM 3

CRN 714976-03-1

CMF C48 H42 N2 O2



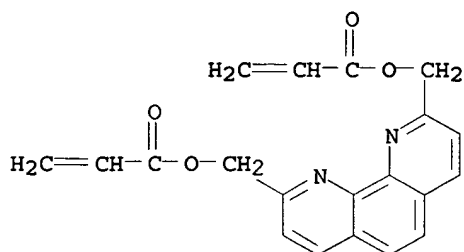
RN 714976-29-1 HCAPLUS

CN 2-Propenoic acid, 1,10-phenanthroline-2,9-diylbis(methylene) ester, polymer with [9-[4'-(9H-carbazol-9-yl)-2',5'-dimethyl[1,1':4',1''-terphenyl]-4-yl]-9H-carbazol-3-yl]methyl 2-propenoate and [4-[[4'-(diphenylamino)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]phenylamino]phenyl]methyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 714976-28-0

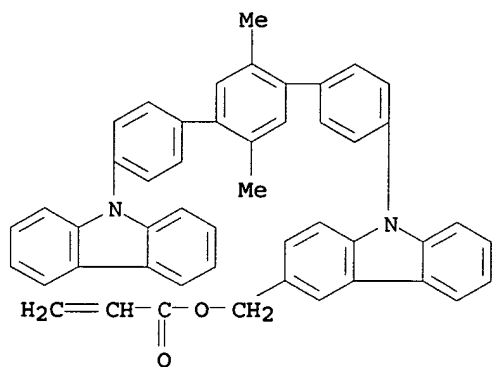
CMF C20 H16 N2 O4



CM 2

CRN 714976-07-5

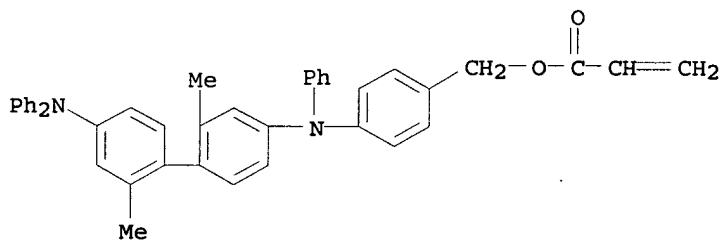
CMF C48 H36 N2 O2



CM 3

CRN 714976-06-4

CMF C42 H36 N2 O2



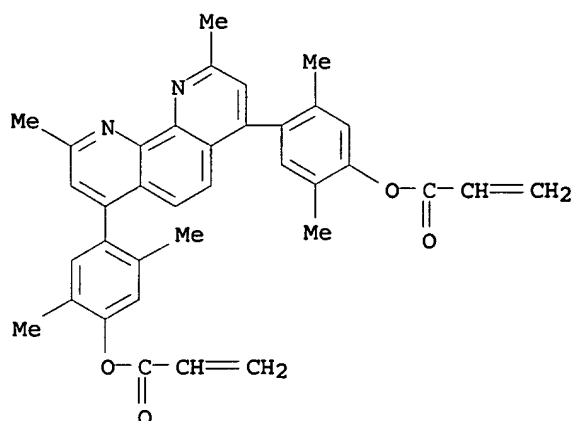
RN 714976-31-5 HCAPLUS

CN 2-Propenoic acid, (2,9-dimethyl-1,10-phenanthroline-4,7-diyl)bis(2,5-dimethyl-4,1-phenylene) ester, polymer with [9-[4'-(9H-carbazol-9-yl)-2',5'-dimethyl[1,1':4',1''-terphenyl]-4-yl]-9H-carbazol-3-yl]methyl 2-propenoate and [4-[[4'-(diphenylamino)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]phenylamino]phenyl]methyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 714976-30-4

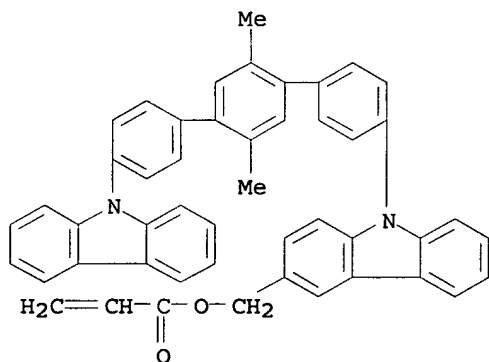
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CM 2

CRN 714976-07-5

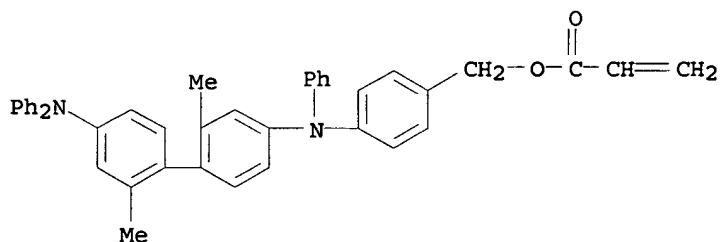
CMF C48 H36 N2 O2



CM 3

CRN 714976-06-4

CMF C42 H36 N2 O2

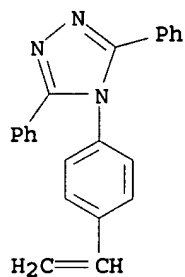


RN 714976-35-9 HCAPLUS
 CN 3-Buten-2-one, 1-[[4-[bis[4-(diphenylamino)phenyl]methyl]cyclohexyl]oxy]-, polymer with 4-(4-ethenylphenyl)-3,5-diphenyl-4H-1,2,4-triazole and 9-(11-ethenyltricyclo[8.2.2.2.4,7]hexadeca-4,6,10,12,13,15-hexaen-5-yl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-34-8

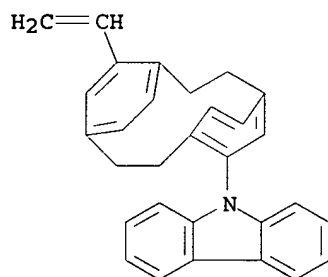
CMF C22 H17 N3



CM 2

CRN 714976-15-5

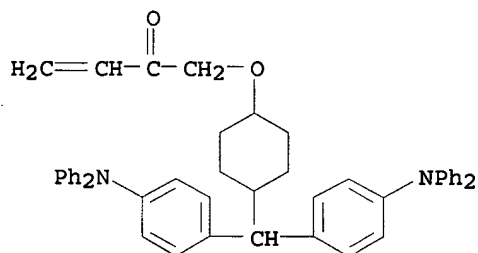
CMF C30 H25 N



CM 3

CRN 714976-04-2

CMF C47 H44 N2 O2

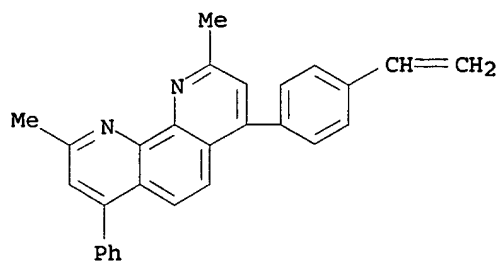


RN 714976-38-2 HCAPLUS

CN Benzenamine, 4,4'-[[4-[(4-ethenylphenyl)phenylamino]-2,5-dimethylphenyl]methylene]bis[2,5-dimethyl-N,N-diphenyl-, polymer with 9-[4'-(9H-carbazol-9-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-carbazole and 4-(4-ethenylphenyl)-2,9-dimethyl-7-phenyl-1,10-phenanthroline (9CI) (CA INDEX NAME)

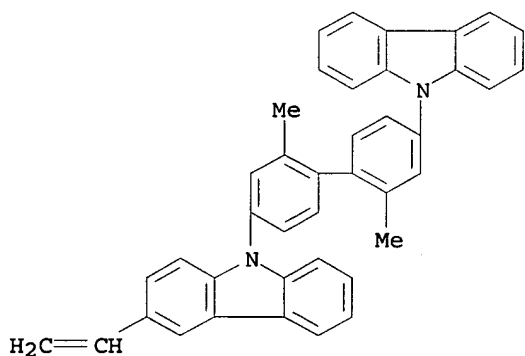
CM 1

CRN 714976-37-1
CMF C28 H22 N2



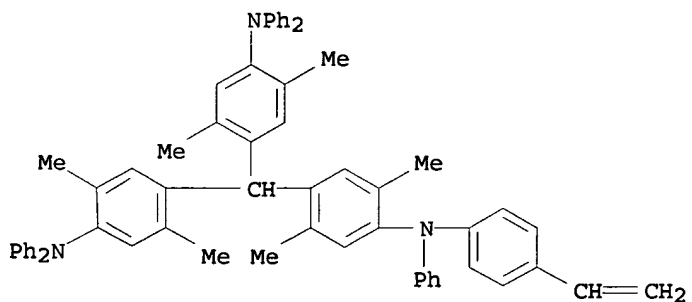
CM 2

CRN 714976-22-4
CMF C40 H30 N2



CM 3

CRN 714976-20-2
CMF C63 H57 N3



| | | |
|----|---|---|
| IC | ICM | H05B033-14 |
| | ICS | C08F212-00; C08F220-34; C08F226-12; C08F293-00; C08G081-00; C08G085-00; C09K011-06; H05B033-10 |
| CC | 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties) | |

Section cross-reference(s): 37, 74
 IT 714976-00-8 714976-02-0 714976-05-3
 714976-08-6 714976-11-1 714976-13-3
 714976-16-6 714976-18-8 714976-21-3
 714976-25-7 714976-27-9 714976-29-1
 714976-31-5 714976-33-7 714976-35-9
 714976-36-0 714976-38-2
 RL: DEV (Device component use); USES (Uses)
 (org. **electroluminescent** device having
phosphorescent dopant and multifunctioning polymer in
 light emitting layer)

L35 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:512741 HCAPLUS
 DOCUMENT NUMBER: 141:79110
 TITLE: Organic electroluminescent devices/displays
 INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2004178896 | A2 | 20040624 | JP 2002-342194 | 200211 26 |
| | | | | 200211 26 |

PRIORITY APPLN. INFO.:

JP 2002-342194

OTHER SOURCE(S): MARPAT 141:79110

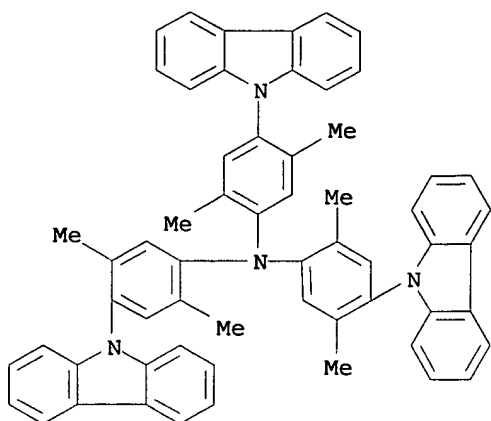
AB The devices/displays comprise, in org. layers, triarylamine
 NAr1Ar2Ar3 (Ar1-3 = substituted ph or 4-biphenyl having carbazol
 substituent) as hosts, and phosphorescent substances capable of
 emitting from the triplet-state exciton as dopants. Preferably, the
 dopants are complexes of Group VIIIB metals. The devices/displays
 show high luminance, quantum efficiency, and long half-life.

IT 655240-58-7 710306-22-2 710306-24-4
 710306-25-5 710306-26-6 710306-27-7
 710306-28-8 710306-29-9 710306-30-2
 710306-31-3 710306-33-5 710306-34-6
 710306-35-7 710306-36-8 710306-37-9
 710320-40-4

RL: TEM (Technical or engineered material use); USES (Uses)
 (host; org. **electroluminescent** device/displays contg.
 triarylamine hosts and **phosphorescent** dopants)

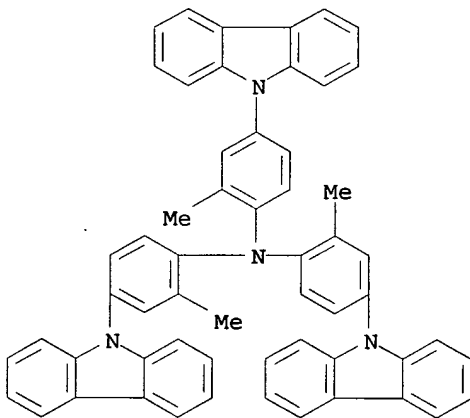
RN 655240-58-7 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,5-
 dimethylphenyl]-2,5-dimethyl- (9CI) (CA INDEX NAME)



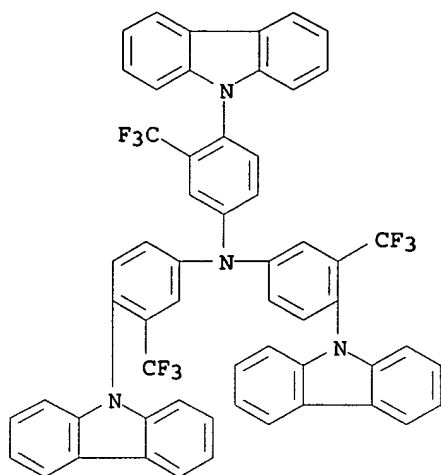
RN 710306-22-2 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2-methylphenyl]-2-methyl- (9CI) (CA INDEX NAME)



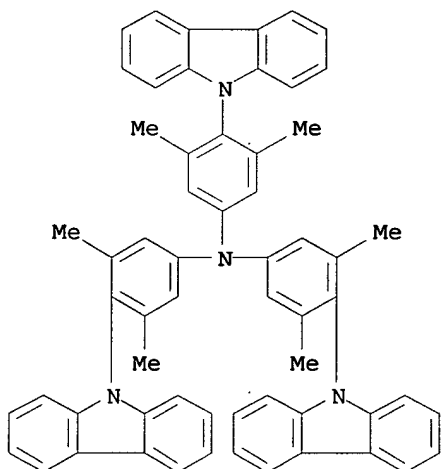
RN 710306-24-4 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3-(trifluoromethyl)phenyl]-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



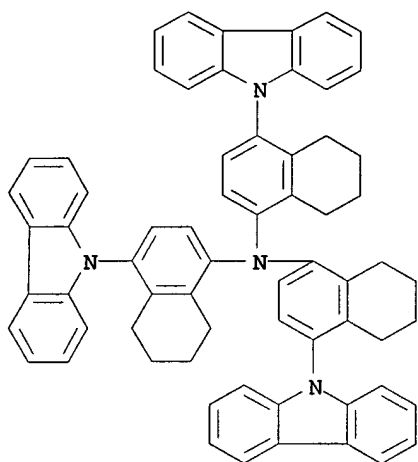
RN 710306-25-5 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3,5-dimethylphenyl]-3,5-dimethyl- (9CI) (CA INDEX NAME)



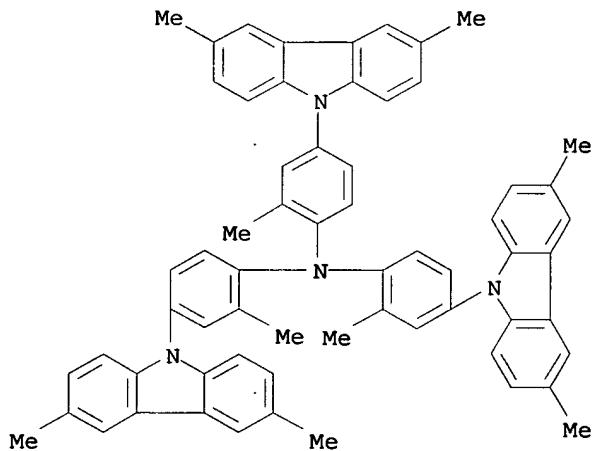
RN 710306-26-6 HCAPLUS

CN 1-Naphthalenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-5,6,7,8-tetrahydro-1-naphthalenyl]-5,6,7,8-tetrahydro- (9CI) (CA INDEX NAME)



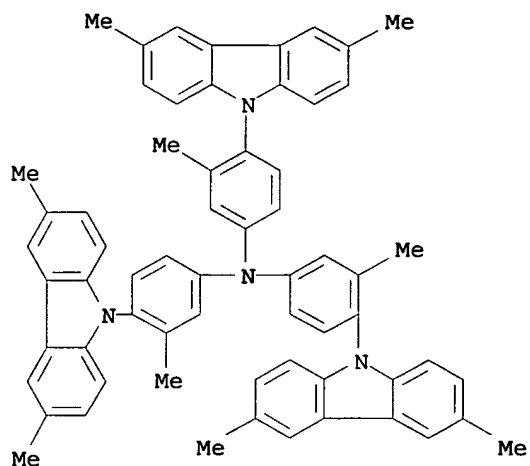
RN 710306-27-7 HCAPLUS

CN Benzenamine, 4-(3,6-dimethyl-9H-carbazol-9-yl)-N,N-bis[4-(3,6-dimethyl-9H-carbazol-9-yl)-2-methylphenyl]-2-methyl- (9CI) (CA INDEX NAME)



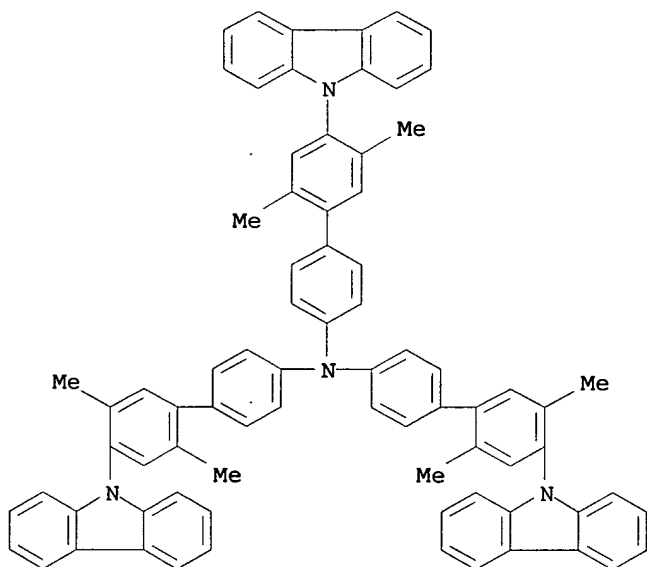
RN 710306-28-8 HCAPLUS

CN Benzenamine, 4-(3,6-dimethyl-9H-carbazol-9-yl)-N,N-bis[4-(3,6-dimethyl-9H-carbazol-9-yl)-3-methylphenyl]-3-methyl- (9CI) (CA INDEX NAME)



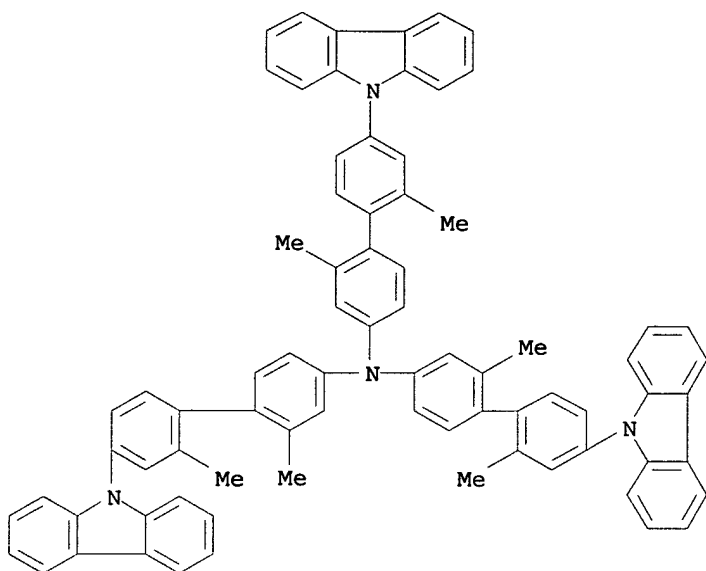
RN 710306-29-9 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-bis[4'-(9H-carbazol-9-yl)-2',5'-dimethyl[1,1'-biphenyl]-4-yl]-2',5'-dimethyl- (9CI) (CA INDEX NAME)



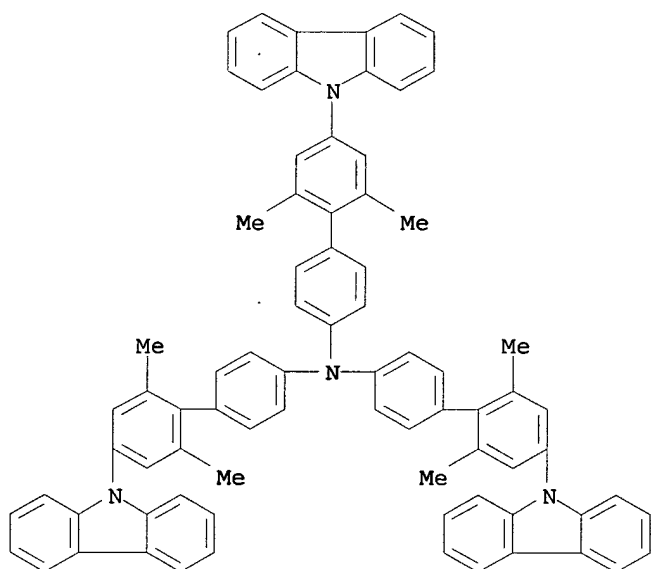
RN 710306-30-2 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-bis[4'-(9H-carbazol-9-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-2,2'-dimethyl- (9CI) (CA INDEX NAME)



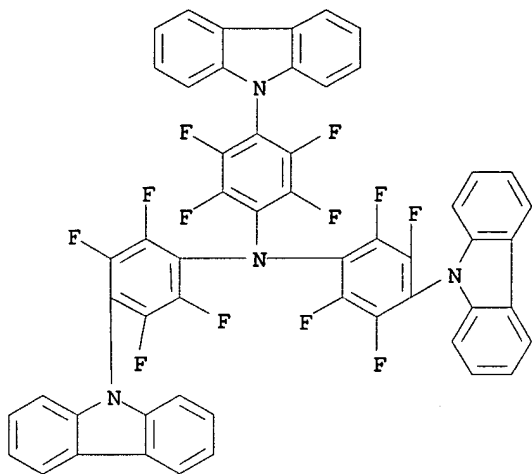
RN 710306-31-3 HCAPLUS

CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-bis[4'-(9H-carbazol-9-yl)-2',6'-dimethyl[1,1'-biphenyl]-4-yl]-2',6'-dimethyl-(9CI) (CA INDEX NAME)



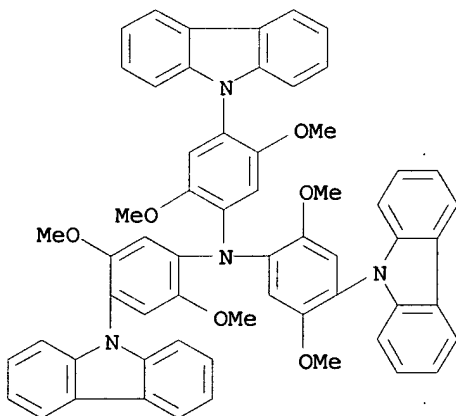
RN 710306-33-5 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,3,5,6-tetrafluorophenyl]-2,3,5,6-tetrafluoro- (9CI) (CA INDEX NAME)



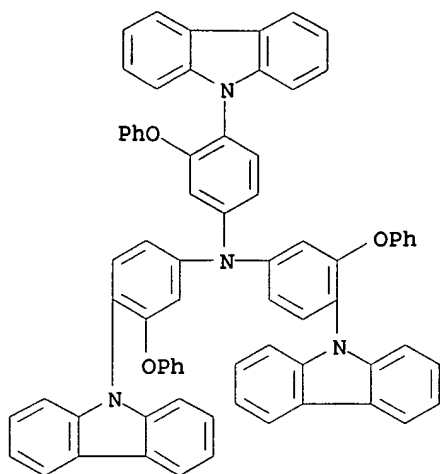
RN 710306-34-6 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,5-dimethoxyphenyl]-2,5-dimethoxy- (9CI) (CA INDEX NAME)



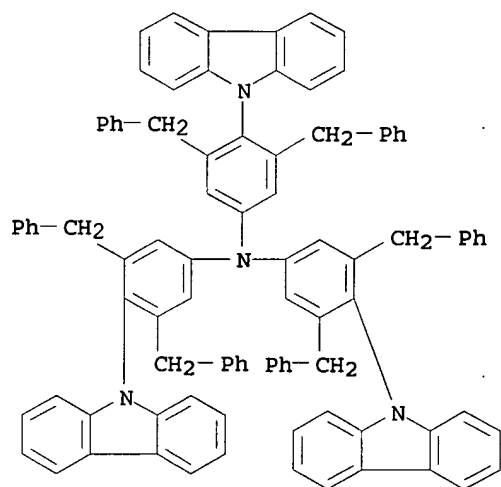
RN 710306-35-7 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3-phenoxyphenyl]-3-phenoxy- (9CI) (CA INDEX NAME)



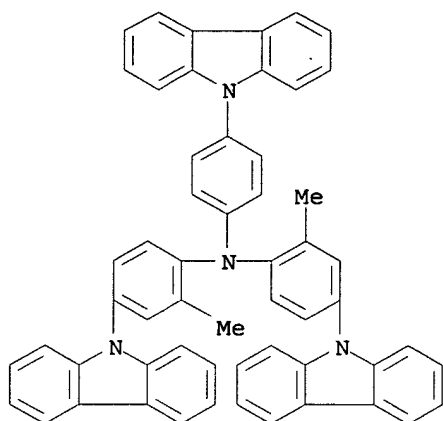
RN 710306-36-8 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3,5-bis(phenylmethyl)phenyl]-3,5-bis(phenylmethyl)- (9CI) (CA INDEX NAME)

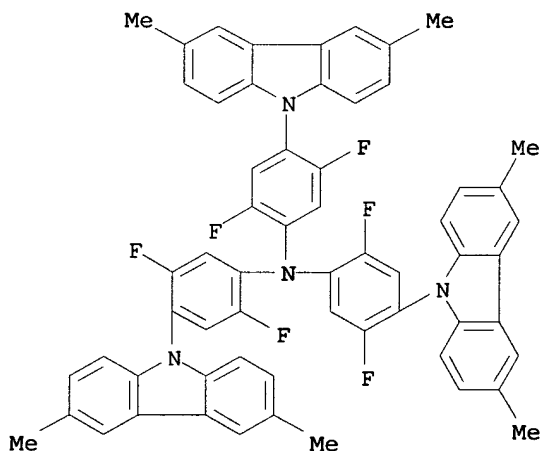


RN 710306-37-9 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N-[4-(9H-carbazol-9-yl)-2-methylphenyl]-N-[4-(9H-carbazol-9-yl)phenyl]-2-methyl- (9CI) (CA INDEX NAME)



RN 710320-40-4 HCAPLUS
 CN Benzenamine, 4-(3,6-dimethyl-9H-carbazol-9-yl)-N,N-bis[4-(3,6-dimethyl-9H-carbazol-9-yl)-2,5-difluorophenyl]-2,5-difluoro- (9CI)
 (CA INDEX NAME)

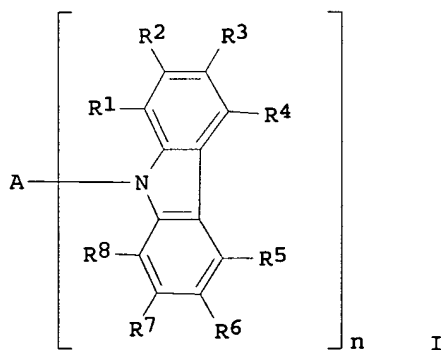


IC ICM H05B033-14
 ICS C09K011-06; H05B033-12
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 IT 655240-58-7 710306-22-2 710306-24-4
 710306-25-5 710306-26-6 710306-27-7
 710306-28-8 710306-29-9 710306-30-2
 710306-31-3 710306-33-5 710306-34-6
 710306-35-7 710306-36-8 710306-37-9
 710320-40-4
 RL: TEM (Technical or engineered material use); USES (Uses)
 (host; org. **electroluminescent** device/displays contg.
 triarylamine hosts and **phosphorescent** dopants)

L35 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:493154 HCAPLUS
 DOCUMENT NUMBER: 141:61823
 TITLE: Organic electroluminescent device and display
 INVENTOR(S): Fukuda, Mitsuhiro; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|----------|
| JP 2004171808 | A2 | 20040617 | JP 2002-333320 | 20021118 |
| PRIORITY APPLN. INFO.: | | | JP 2002-333320 | 20021118 |
| OTHER SOURCE(S): | | | MARPAT 141:61823 | |
| GI | | | | |

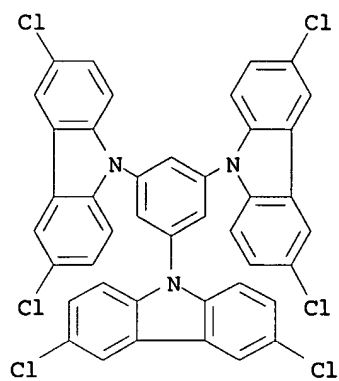


AB The invention relates to an org. electroluminescent device and display, esp. a phosphorescent electroluminescence device, comprising the carbazole deriv. represented by I [A = arom. ring residue; R1-8 = H and substituted group (at least one of R1-8 is a substituted group other than H); n = ≥1 integer].

IT 705280-84-8 705280-85-9 705280-86-0
 705280-87-1 705280-88-2 705280-95-1
 705280-96-2 705280-97-3 705280-98-4
 705281-00-1 705281-01-2
 RL: DEV (Device component use); USES (Uses)
 (phosphorescent org. electroluminescent device and display)

RN 705280-84-8 HCAPLUS

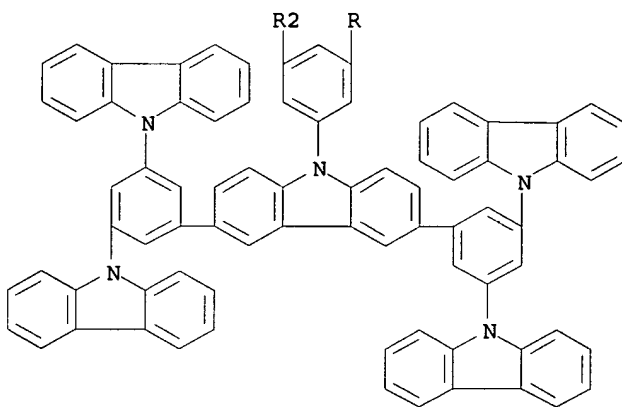
CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[3,6-dichloro- (9CI)
 (CA INDEX NAME)



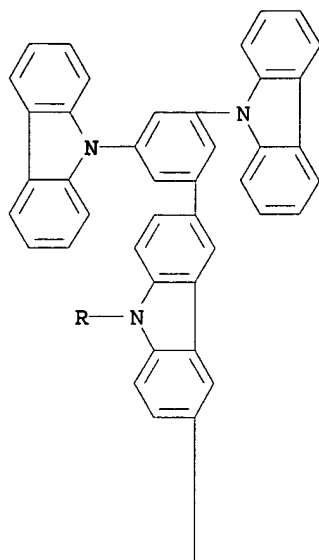
RN 705280-85-9 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[3,6-bis(3,5-di-9H-carbazol-9-ylphenyl)- (9CI) (CA INDEX NAME)

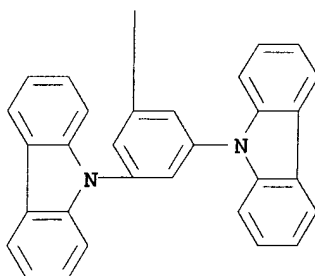
PAGE 1-A



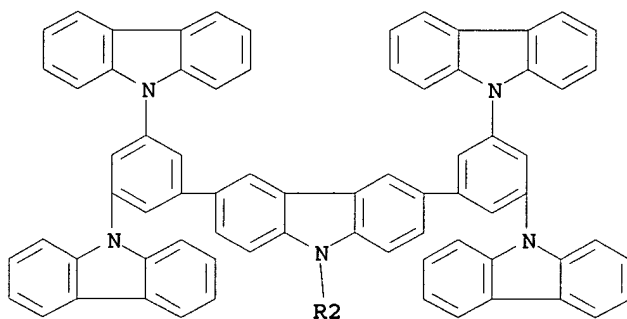
PAGE 2-A



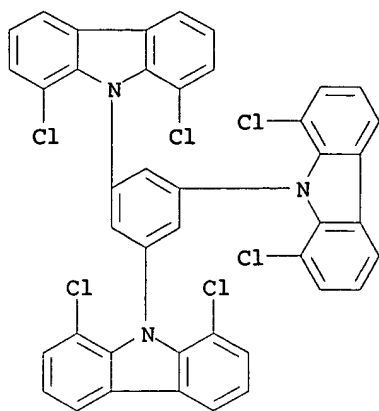
PAGE 3-A



PAGE 4-A

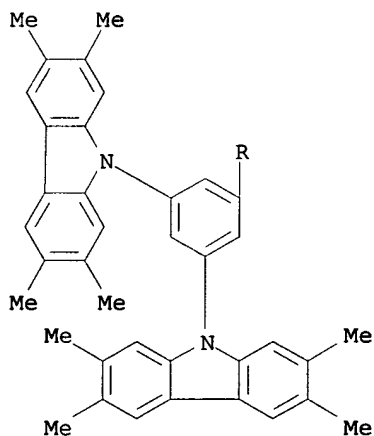


RN 705280-86-0 HCAPLUS
CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[1,8-dichloro- (9CI)
(CA INDEX NAME)

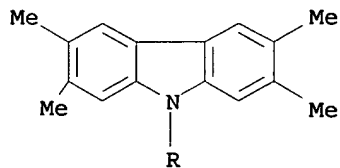


RN 705280-87-1 HCAPLUS
 CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[2,3,6,7-tetramethyl-(9CI)] (CA INDEX NAME)

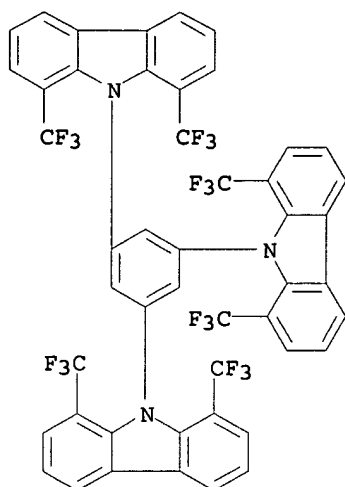
PAGE 1-A



PAGE 2-A

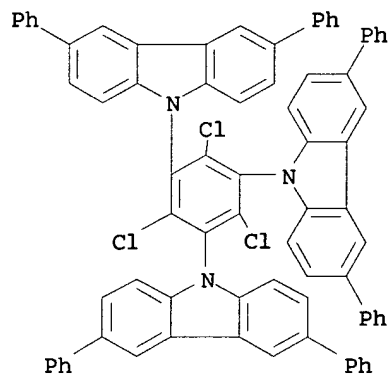


RN 705280-88-2 HCAPLUS
 CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[1,8-bis(trifluoromethyl)- (9CI)] (CA INDEX NAME)



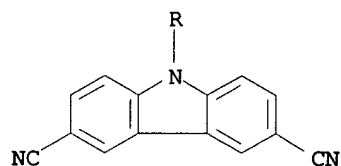
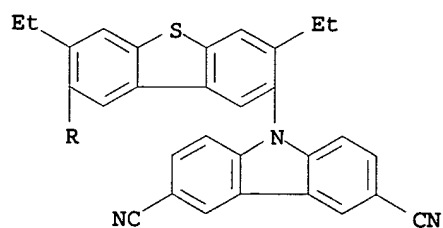
RN 705280-95-1 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(2,4,6-trichloro-1,3,5-benzenetriyl)tris[3,6-diphenyl- (9CI) (CA INDEX NAME)



RN 705280-96-2 HCAPLUS

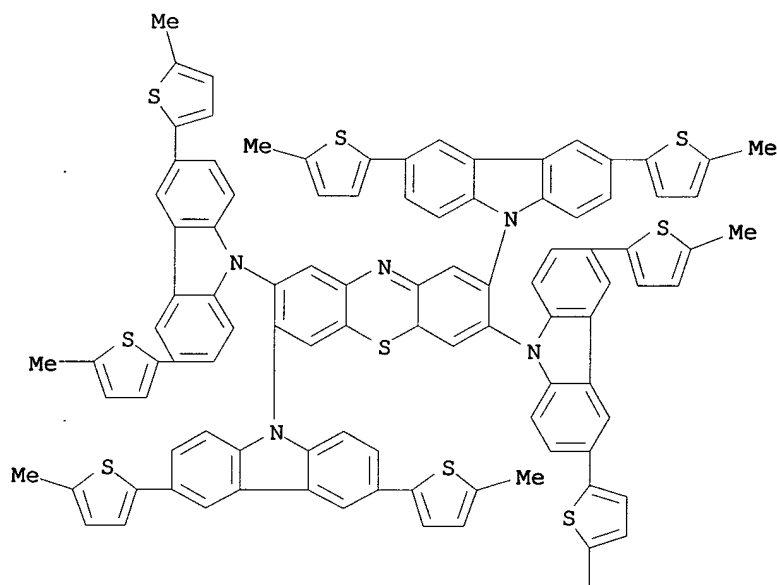
CN 9H-Carbazole-3,6-dicarbonitrile, 9,9'-(3,7-diethyl-2,8-dibenzothiophenediyl)bis- (9CI) (CA INDEX NAME)



RN 705280-97-3 HCAPLUS

CN 4aH-Phenothiazine, 2,3,7,8-tetrakis[3,6-bis(5-methyl-2-thienyl)-9H-carbazol-9-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



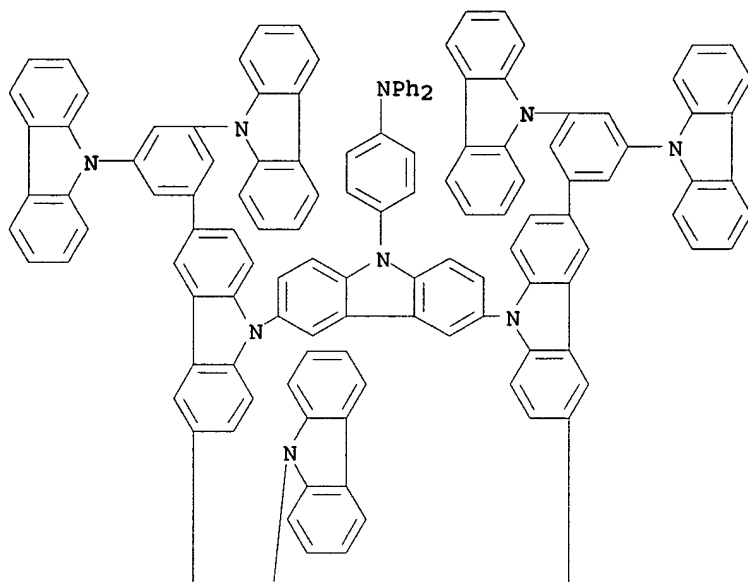
PAGE 2-A



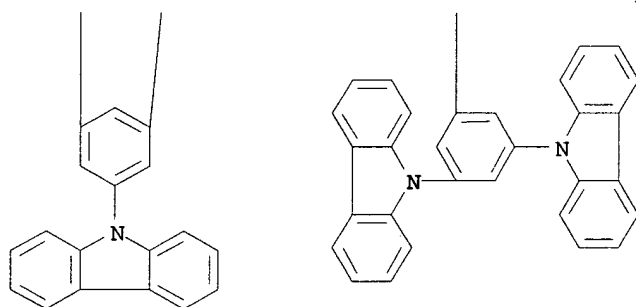
RN 705280-98-4 HCAPLUS

CN Benzenamine, N,N-diphenyl-4-[3,3',6,6''-tetrakis(3,5-di-9H-carbazol-9-ylphenyl)[9,3':6',9''-ter-9H-carbazol]-9'-yl]- (9CI) (CA INDEX NAME)

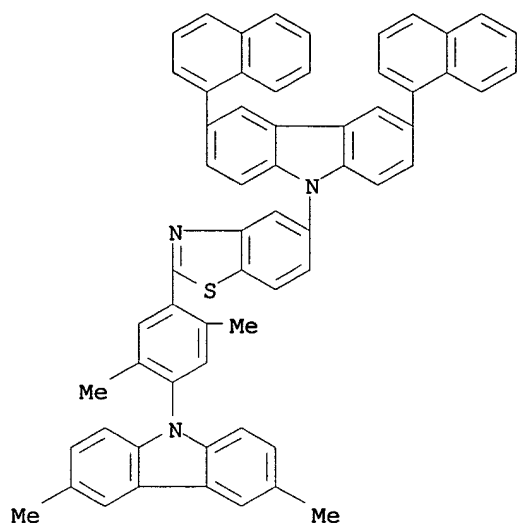
PAGE 1-A



PAGE 2-A

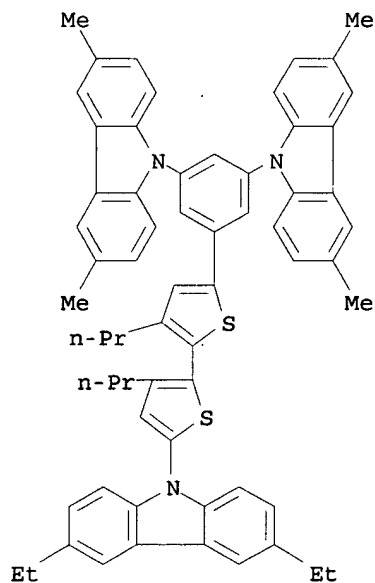


RN 705281-00-1 HCAPLUS
 CN 9H-Carbazole, 9-[2-[4-(3,6-dimethyl-9H-carbazol-9-yl)-2,5-dimethylphenyl]-5-benzothiazolyl]-3,6-di-1-naphthalenyl- (9CI) (CA INDEX NAME)



RN 705281-01-2 HCAPLUS

CN 9H-Carbazole, 9,9'-[5-[5'-(3,6-diethyl-9H-carbazol-9-yl)-3,3'-dipropyl[2,2'-bithiophen]-5-yl]-1,3-phenylene]bis[3,6-dimethyl- (9CI) (CA INDEX NAME)

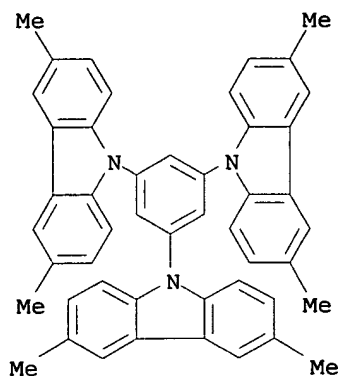


IT 705280-81-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(phosphorescent org. electroluminescent device and display)

RN 705280-81-5 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[3,6-dimethyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
ICS C09K011-06
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
IT 86-74-8D, Carbazole, derivs. 705280-84-8
705280-85-9 705280-86-0 705280-87-1
705280-88-2 705280-89-3 705280-90-6 705280-91-7
705280-92-8 705280-93-9 705280-94-0 705280-95-1
705280-96-2 705280-97-3 705280-98-4
705280-99-5 705281-00-1 705281-01-2
RL: DEV (Device component use); USES (Uses)
(phosphorescent org. electroluminescent device and display)
IT 705280-81-5P 705280-83-7P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(phosphorescent org. electroluminescent device and display)

L35 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:473163 HCAPLUS
DOCUMENT NUMBER: 141:30891
TITLE: Organic electroluminescent device and display
INVENTOR(S): Fukuda, Mitsuhiro; Kita, Hiroshi; Yamada, Taketoshi
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 37 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|------------|
| US 2004110031 | A1 | 20040610 | US 2003-718360 | 20031120 |
| JP 2004178895 | A2 | 20040624 | JP 2002-342192 | 20021126 |
| PRIORITY APPLN. INFO.: | | | JP 2002-342192 | A 20021126 |

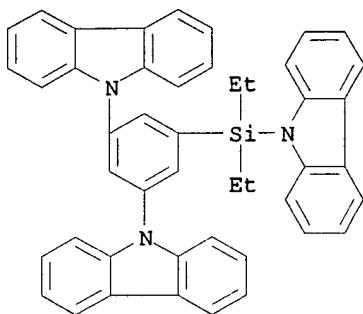
OTHER SOURCE(S): MARPAT 141:30891

AB Disclosed is an org. electroluminescent device comprising a component layer including a light emission layer, wherein the light emission layer contains a phosphorescent compd., and the component layer contains a compd. represented by A-(Z)n, [A = (un)substituted arom. ring residue; n = 3-6 integer; and Z = monovalent org. group represented by -L-Cz, [L = chem. bond and divalent linking group; Cz = (un)substituted carbazole residue], provided that A-(Z)n does not have an n-fold axis of symmetry].

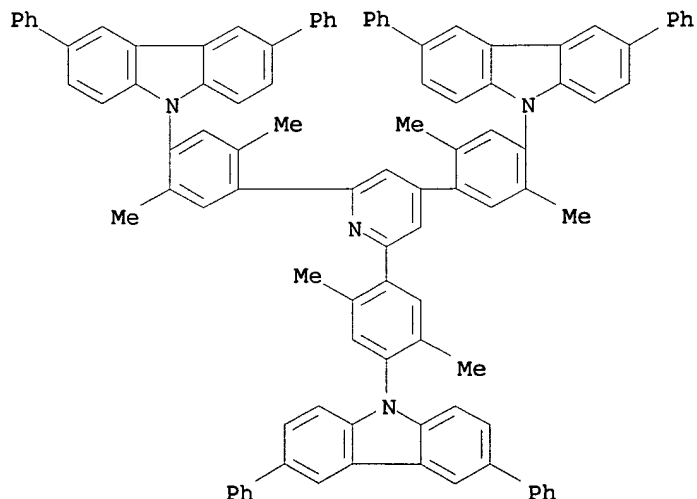
IT 699119-91-0P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(Iorg. electroluminescent device and display having light emitting layer contg. phosphorescent substance)

RN 699119-91-0 HCAPLUS

CN 9H-Carbazole, 9,9'-[5-(9H-carbazol-9-yl-diethylsilyl)-1,3-phenylene]bis- (9CI) (CA INDEX NAME)

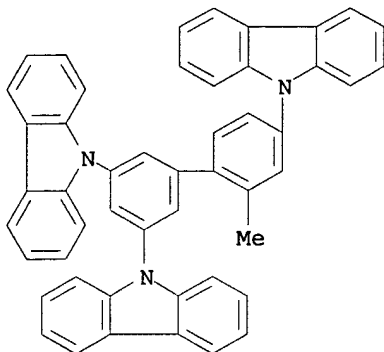


IT 699119-40-9P 699119-44-3P 699119-49-8P
699119-54-5P 699119-65-8P 699119-73-8P
699119-77-2P 699119-86-3P 699120-00-8P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(org. **electroluminescent** device and display having
light emitting layer contg. **phosphorescent** substance)
RN 699119-40-9 HCAPLUS
CN 9H-Carbazole, 9,9',9''-[2,4,6-pyridinetriyltris(2,5-dimethyl-4,1-
phenylene)]tris[3,6-diphenyl- (9CI) (CA INDEX NAME)



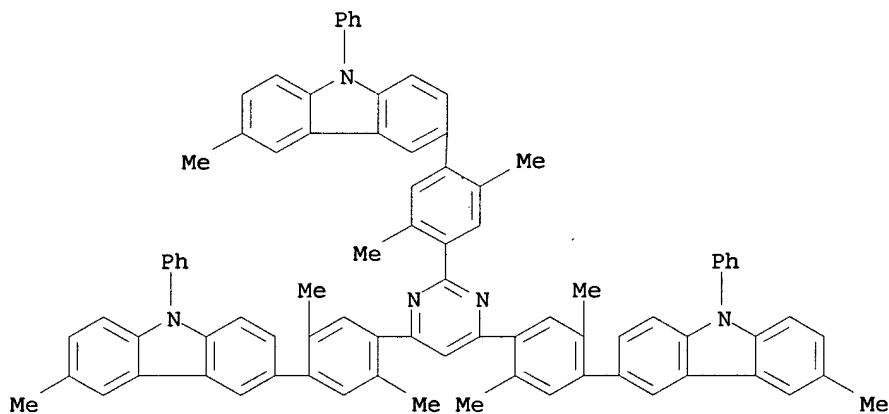
RN 699119-44-3 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(2'-methyl[1,1'-biphenyl]-3,4',5-triyl)tris-(9CI) (CA INDEX NAME)



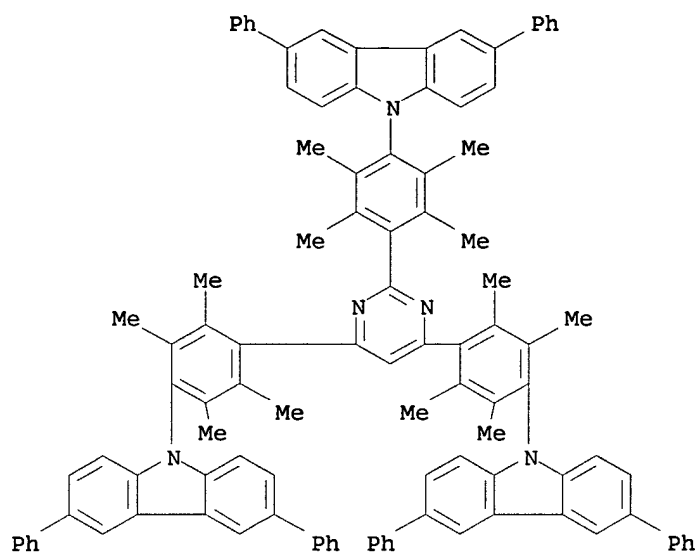
RN 699119-49-8 HCAPLUS

CN 9H-Carbazole, 3,3',3''-[2,4,6-pyrimidinetriyltris(2,5-dimethyl-4,1-phenylene)]tris[6-methyl-9-phenyl- (9CI) (CA INDEX NAME)



RN 699119-54-5 HCAPLUS

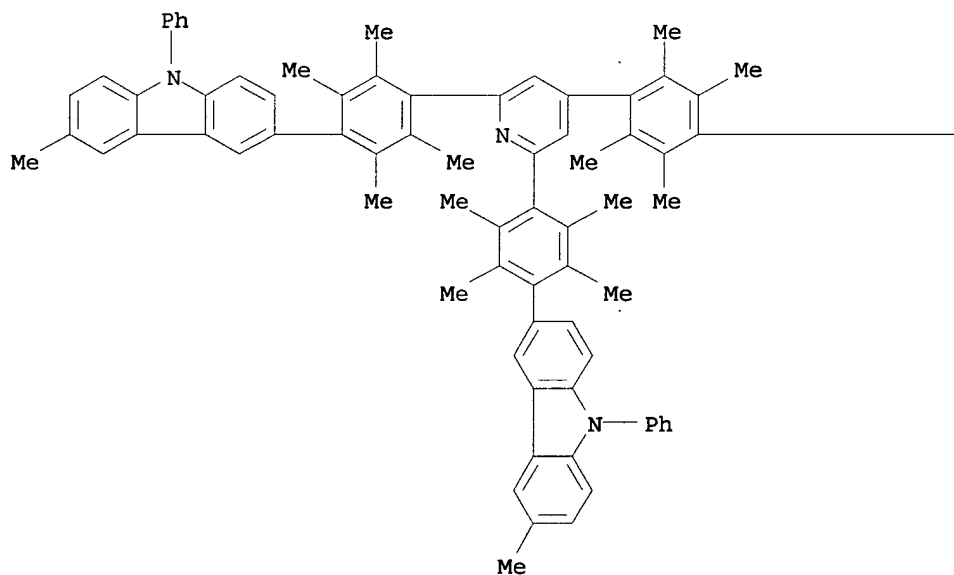
CN 9H-Carbazole, 9,9',9''-[2,4,6-pyrimidinetriyltris(2,3,5,6-tetramethyl-4,1-phenylene)]tris[3,6-diphenyl- (9CI) (CA INDEX NAME)



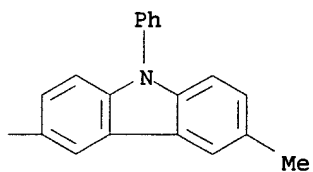
RN 699119-65-8 HCAPLUS

CN 9H-Carbazole, 3,3',3''-[2,4,6-pyridinetriyltris(2,3,5,6-tetramethyl-4,1-phenylene)]tris[6-methyl-9-phenyl- (9CI) (CA INDEX NAME)

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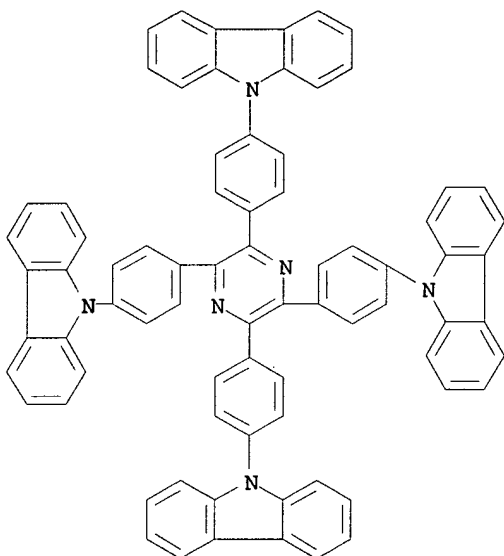


PAGE 1-B



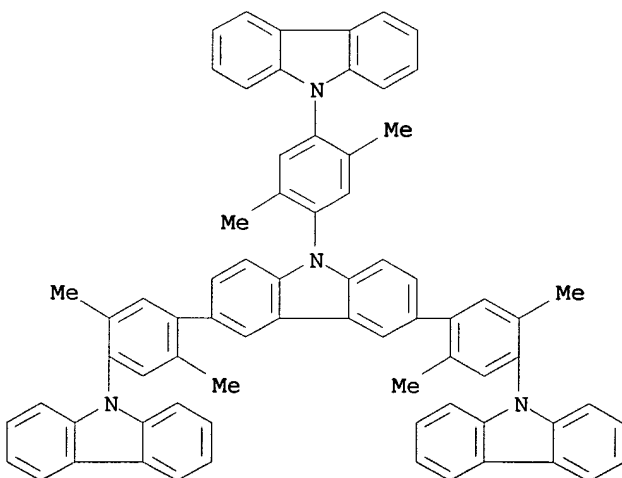
RN 699119-73-8 HCAPLUS

CN 9H-Carbazole, 9,9',9'',9'''-(2,3,5,6-pyrazinetetrayltetra-4,1-phenylene)tetrakis- (9CI) (CA INDEX NAME)



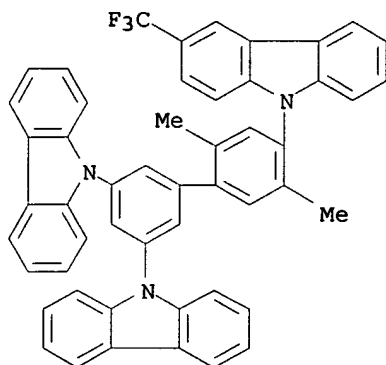
RN 699119-77-2 HCAPLUS

CN 9H-Carbazole, 3,6,9-tris[4-(9H-carbazol-9-yl)-2,5-dimethylphenyl]- (9CI) (CA INDEX NAME)



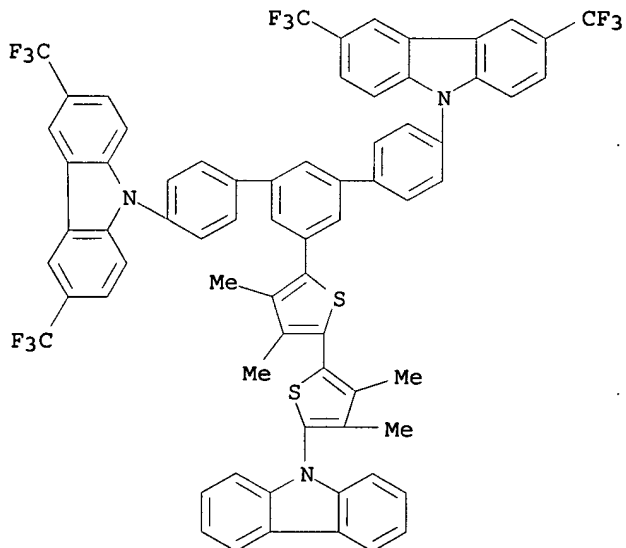
RN 699119-86-3 HCAPLUS

CN 9H-Carbazole, 9-[3',5'-bis(9H-carbazol-9-yl)-2,5-dimethyl[1,1'-biphenyl]-4-yl]-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 699120-00-8 HCAPLUS

CN 9H-Carbazole, 9,9'-[5'-[5'-(9H-carbazol-9-yl)-3,3',4,4'-tetramethyl[2,2'-bithiophen]-5-yl][1,1':3',1''-terphenyl]-4,4''-diyl]bis[3,6-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



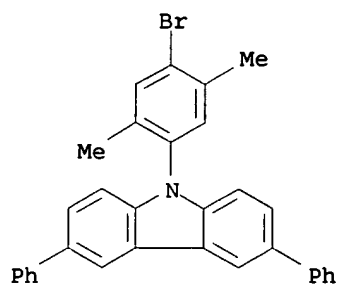
IT 699119-10-3P 699119-14-7P 699119-23-8P

699119-26-1P 699119-32-9P

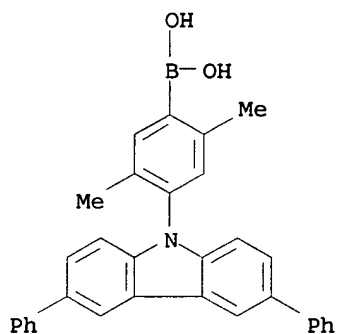
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)(org. **electroluminescent** device and display having
light emitting layer contg. **phosphorescent** substance)

RN 699119-10-3 HCAPLUS

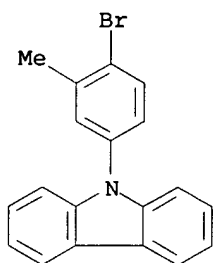
CN 9H-Carbazole, 9-(4-bromo-2,5-dimethylphenyl)-3,6-diphenyl- (9CI)
(CA INDEX NAME)



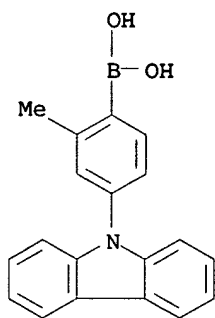
RN 699119-14-7 HCAPLUS
 CN Boronic acid, [4-(3,6-diphenyl-9H-carbazol-9-yl)-2,5-dimethylphenyl]-
 (9CI) (CA INDEX NAME)



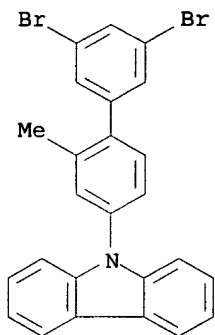
RN 699119-23-8 HCAPLUS
 CN 9H-Carbazole, 9-(4-bromo-3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 699119-26-1 HCAPLUS
 CN Boronic acid, [4-(9H-carbazol-9-yl)-2-methylphenyl]- (9CI) (CA
 INDEX NAME)



RN 699119-32-9 HCAPLUS
 CN 9H-Carbazole, 9-(3',5'-dibromo-2-methyl[1,1'-biphenyl]-4-yl)- (9CI)
 (CA INDEX NAME)



IC ICM H05B033-14
 INCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 IT 699119-91-0P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (org. **electroluminescent** device and display having light emitting layer contg. **phosphorescent** substance)
 IT 699119-36-3P 699119-40-9P 699119-44-3P
 699119-49-8P 699119-54-5P 699119-58-9P
 699119-61-4P 699119-65-8P 699119-69-2P
 699119-73-8P 699119-77-2P 699119-81-8P
 699119-86-3P 699119-96-5P 699120-00-8P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (org. **electroluminescent** device and display having light emitting layer contg. **phosphorescent** substance)
 IT 6825-20-3P 56525-79-2P 699119-10-3P 699119-14-7P
 699119-23-8P 699119-26-1P 699119-32-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (org. **electroluminescent** device and display having light emitting layer contg. **phosphorescent** substance)

L35 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:355031 HCAPLUS
 DOCUMENT NUMBER: 140:365418
 TITLE: Material for organic electroluminescence element, and organic electroluminescence element

INVENTOR(S): using the same
Tomita, Seiji; Iwakuma, Toshihiro; Arakane,
Takashi; Yasuda, Hiroya; Hosokawa, Chishio
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
SOURCE: PCT Int. Appl., 62 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2004035709 | A1 | 20040429 | WO 2003-JP13186 | 20031015 |
| W: CN, IN, JP, KR, US RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR EP 1555305 A1 20050720 EP 2003-754133 20031015 | | | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK CN 1705731 A 20051207 CN 2003-80101772 20031015 | | | | |
| US 2006141284 | A1 | 20060629 | US 2005-532001 | 20050810 |
| PRIORITY APPLN. INFO.: JP 2002-305375 A 20021021 | | | | |
| WO 2003-JP13186 W 20031015 | | | | |

OTHER SOURCE(S): MARPAT 140:365418

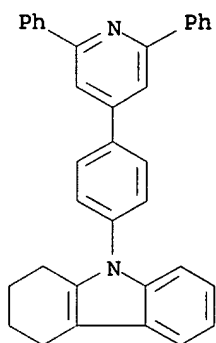
AB A material for an org. electroluminescence (EL) element comprising a compd. having a specific N-contg. condensed ring structure; and an org. EL element which comprises a cathode, an anode and, sandwiched between them, ≥ 1 of org. thin film layers, wherein at least 1 org. thin layer is an org. EL layer contg. the above material for an org. EL element. The material for an org. EL element can provide an org. EL element being capable of achieving high luminous efficiency with a low elec. voltage.

IT 682801-06-5P 682801-07-6P 682801-08-7P
682801-09-8P 682801-11-2P 682801-13-4P
682801-15-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(host material for phosphorescent guest in;
phosphorescent org. electroluminescent device)

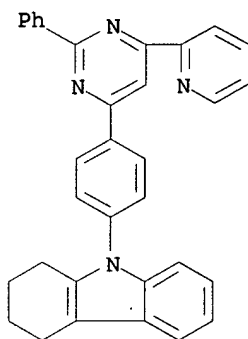
RN 682801-06-5 HCAPLUS

CN 1H-Carbazole, 9-[4-(2,6-diphenyl-4-pyridinyl)phenyl]-2,3,4,9-tetrahydro- (9CI) (CA INDEX NAME)



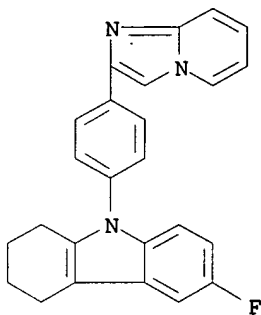
RN 682801-07-6 HCAPLUS

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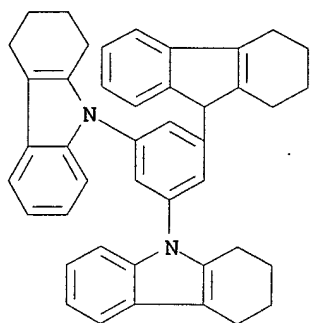
RN 682801-08-7 HCAPLUS

CN 1H-Carbazole, 6-fluoro-2,3,4,9-tetrahydro-9-(4-imidazo[1,2-a]pyridin-2-ylphenyl)- (9CI) (CA INDEX NAME)



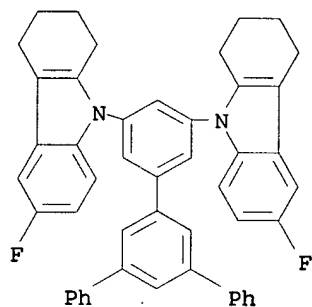
RN 682801-09-8 HCAPLUS

CN 1H-Carbazole, 9,9'-(5-(2,3,4,9-tetrahydro-1H-fluoren-9-yl)-1,3-phenylene)bis[2,3,4,9-tetrahydro- (9CI) (CA INDEX NAME)



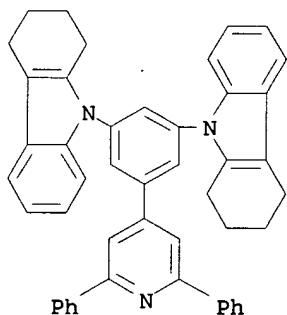
RN 682801-11-2 HCAPLUS

CN 1H-Carbazole, 9,9'-(5'-phenyl[1,1':3',1''-terphenyl]-3,5-diyl)bis[6-fluoro-2,3,4,9-tetrahydro- (9CI) (CA INDEX NAME)



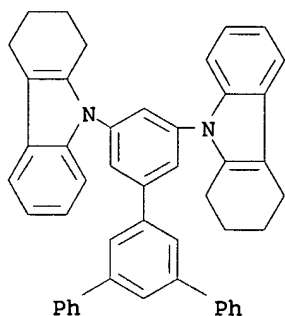
RN 682801-13-4 HCAPLUS

CN 1H-Carbazole, 9,9'-(5-(2,6-diphenyl-4-pyridinyl)-1,3-phenylene]bis[2,3,4,9-tetrahydro- (9CI) (CA INDEX NAME)

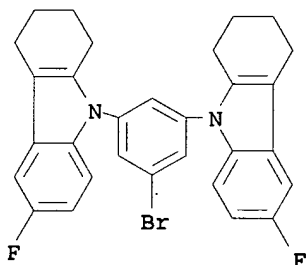


RN 682801-15-6 HCAPLUS

CN 9H-Carbazole, 9,9'-(5'-phenyl[1,1':3',1''-terphenyl]-3,5-diyl)bis[1,2,3,4-tetrahydro- (9CI) (CA INDEX NAME)



IT 682801-10-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)
 (in prepn. of host material for **phosphorescent** guest;
phosphorescent org. **electroluminescent** device)
 RN 682801-10-1 HCAPLUS
 CN 1H-Carbazole, 9,9'-(5-bromo-1,3-phenylene)bis[6-fluoro-2,3,4,9-
 tetrahydro- (9CI) (CA INDEX NAME)



IC ICM C09K011-06
 ICS H05B033-14
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 74
 IT 682801-06-5P 682801-07-6P 682801-08-7P
 682801-09-8P 682801-11-2P 682801-12-3P
 682801-13-4P 682801-14-5P 682801-15-6P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (host material for **phosphorescent** guest in;
phosphorescent org. **electroluminescent** device)
 IT 486-91-9P 1122-91-4P 1498-81-3P 2367-17-1P 16232-01-2P
 34658-66-7P 58954-05-5P 607739-87-7P 682801-10-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)
 (in prepn. of host material for **phosphorescent** guest;
phosphorescent org. **electroluminescent** device)
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L35 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:334022 HCAPLUS
 DOCUMENT NUMBER: 140:365380
 TITLE: Organic electroluminescent device
 INVENTOR(S): Arakane, Takashi; Iwakuma, Toshihiro; Hosokawa,
 Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 81 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------------------------|
| WO 2004034751 | A1 | 20040422 | WO 2003-JP12598 | 20031001 |
| W: CN, JP, KR, US RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR EP 1551206 A1 20050706 EP 2003-751304 20031001 | | | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK CN 1703937 A 20051130 CN 2003-80101284 20031001 | | | | |
| PRIORITY APPLN. INFO.: | | | | JP 2002-296024 A 20021009 |
| | | | | WO 2003-JP12598 W 20031001 |

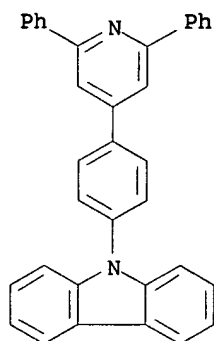
AB An org. electroluminescent device having, between a cathode and an anode, a light-emitting layer which is made of at least a phosphorescent material and a host material, has an electron injection layer arranged between the light-emitting layer and the cathode and having a junction with the light-emitting layer. The light-emitting layer has electron transport properties and the ionization potential of the host material is 5.9 eV or less. The energy gap of an electron transport material in the electron injection layer is smaller than that of the host material in the light-emitting layer, or the triplet energy of the electron transport material in the electron injection layer is smaller than that of the host material in the light-emitting layer. The org. electroluminescent device uses light emission of phosphorescence and has high luminous efficiency.

IT 607740-04-5 607740-09-0

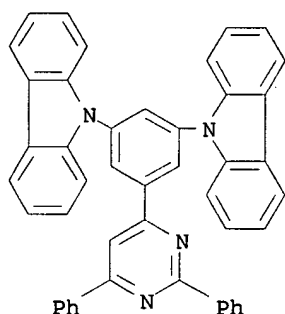
RL: DEV (Device component use); USES (Uses)
 (electroluminescent layer host; org.
 electroluminescent device with phosphorescent
 guest in electroluminescent layer)

RN 607740-04-5 HCAPLUS

CN 9H-Carbazole, 9-[4-(2,6-diphenyl-4-pyridinyl)phenyl]- (9CI) (CA INDEX NAME)



RN 607740-09-0 HCAPLUS
 CN 9H-Carbazole, 9,9'-[5-(2,6-diphenyl-4-pyrimidinyl)-1,3-phenylene]bis-
 (9CI) (CA INDEX NAME)



IC ICM H05B033-22
 ICS H05B033-14
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 IT 607740-04-5 607740-09-0
 RL: DEV (Device component use); USES (Uses)
 (electroluminescent layer host; org.
 electroluminescent device with phosphorescent
 guest in electroluminescent layer)
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L35 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:180622 HCAPLUS
 DOCUMENT NUMBER: 140:207269
 TITLE: Organic electroluminescence device employing
 phosphorescence, and image display using it
 INVENTOR(S): Matsuura, Mitsunobu; Kinoshita, Motoki; Yamada,
 Taketoshi; Kita, Hiroshi
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

JP 2004071500

A2

20040304

JP 2002-232781

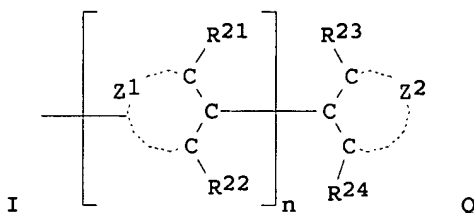
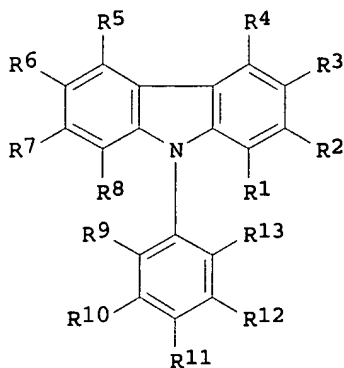
200208
09

PRIORITY APPLN. INFO.:

JP 2002-232781

200208
09OTHER SOURCE(S):
GI

MARPAT 140:207269



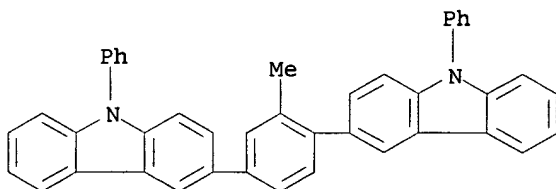
AB An org. electroluminescent device comprises a light-emitting layer contg. a host compd. and a phosphorescent compd., wherein a carbazole I [R1-13 = H, monovalent substituent; at least one of R1-8 is Q; Z1-2 = at. group forming arom. ring; R21-24 = H, monovalent substituent; n = 0, 1; at least one of R23-24 is monovalent substituent when n = 0; at least one of R21-24 is monovalent substituent when n = 1]. The phosphorescent compd. may be an iridium compd., osmium compd., and/or a platinum compd. The device achieves high emission efficiency, high luminance, and durability.

IT 663219-22-5 663219-23-6 663219-24-7
663219-25-8 663219-26-9 663219-27-0
663219-28-1 663219-29-2 663219-30-5
663219-31-6 663219-32-7 663219-33-8
663219-34-9 663219-35-0 663219-36-1
663219-37-2 663219-38-3 663219-39-4
663219-40-7 663219-41-8 663219-42-9
663219-43-0 663219-44-1 663219-45-2
663219-46-3

RL: DEV (Device component use); USES (Uses)
(org. electroluminescence device and its imaging
display employing phosphorescence and contg. carbazole)

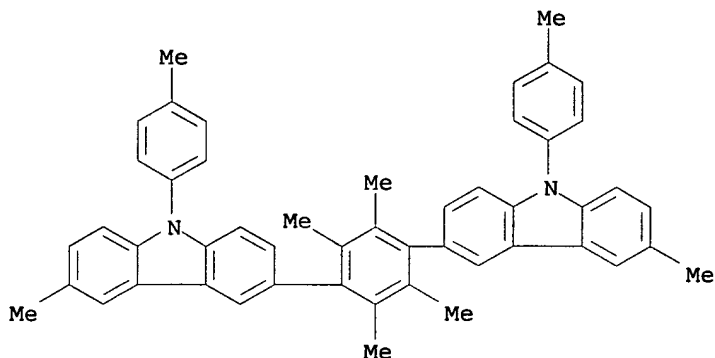
RN 663219-22-5 HCAPLUS

CN 9H-Carbazole, 3,3'-(2-methyl-1,4-phenylene)bis[9-phenyl- (9CI) (CA
INDEX NAME)

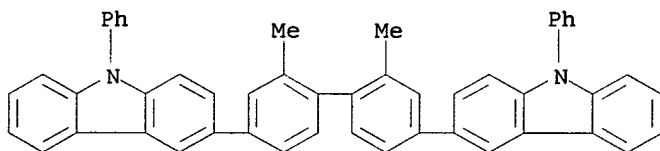


RN 663219-23-6 HCAPLUS

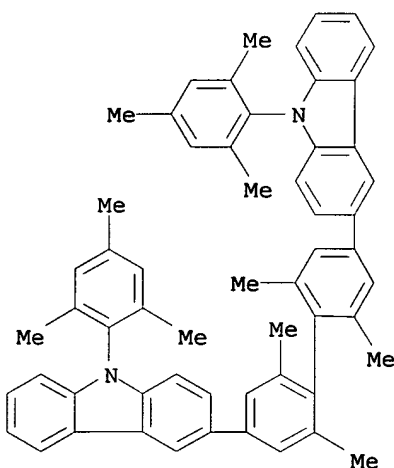
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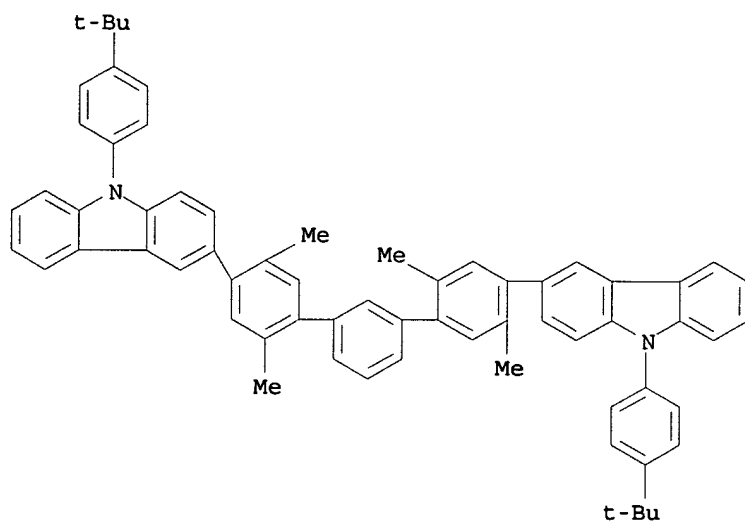
RN 663219-24-7 HCAPLUS
CN 9H-Carbazole, 3,3'-(2,2'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis[9-phenyl- (9CI) (CA INDEX NAME)



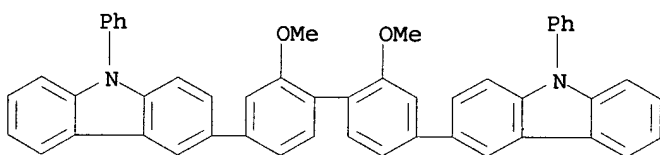
RN 663219-25-8 HCAPLUS
CN 9H-Carbazole, 3,3'-(2,2',6,6'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis[9-(2,4,6-trimethylphenyl)- (9CI) (CA INDEX NAME)



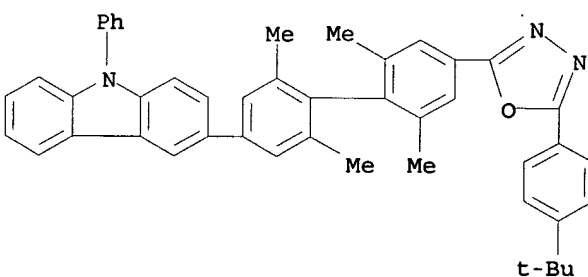
RN 663219-26-9 HCAPLUS
CN 9H-Carbazole, 3,3'-(2,2'',5,5''-tetramethyl[1,1':3',1''-terphenyl]-4,4''-diyl)bis[9-[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



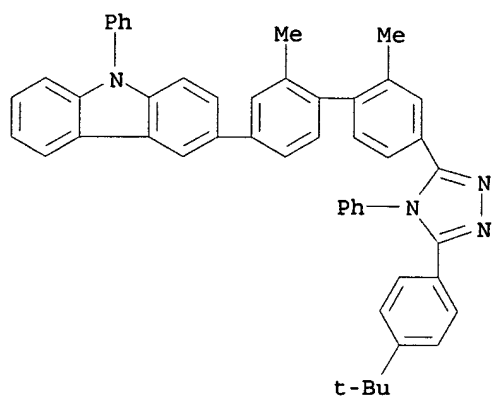
RN 663219-27-0 HCAPLUS
 CN 9H-Carbazole, 3,3'-(2,2'-dimethoxy[1,1'-biphenyl]-4,4'-diyl)bis[9-phenyl- (9CI) (CA INDEX NAME)



RN 663219-28-1 HCAPLUS
 CN 9H-Carbazole, 3-[4'-(5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl)-2,2',6,6'-tetramethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)

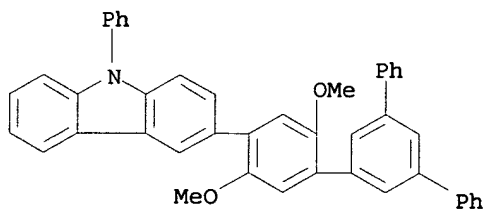


RN 663219-29-2 HCAPLUS
 CN 9H-Carbazole, 3-[4'-(5-[4-(1,1-dimethylethyl)phenyl]-4-phenyl-4H-1,2,4-triazol-3-yl)-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)



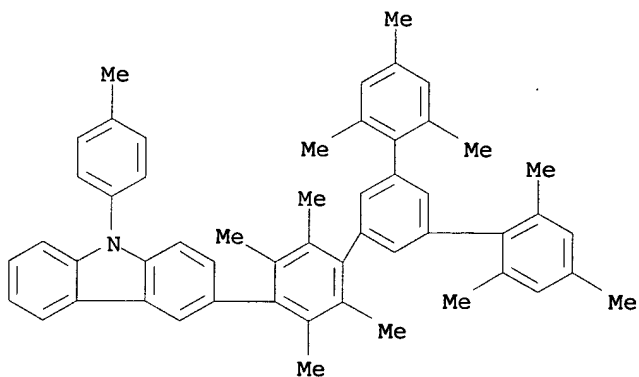
RN 663219-30-5 HCAPLUS

CN 9H-Carbazole, 3-(2,5-dimethoxy-5'-phenyl[1,1':3',1''-terphenyl]-4-yl)-9-phenyl- (9CI) (CA INDEX NAME)



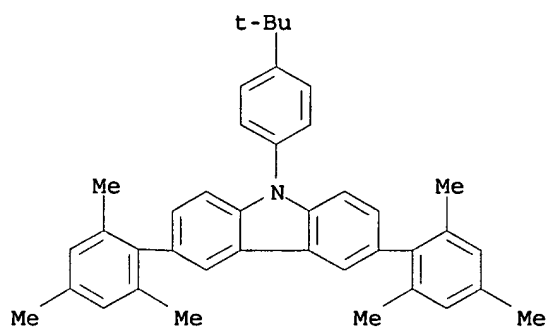
RN 663219-31-6 HCAPLUS

CN 9H-Carbazole, 3-[2,2'',3,4'',5,6,6''-heptamethyl-5'-(2,4,6-trimethylphenyl)[1,1':3',1''-terphenyl]-4-yl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)



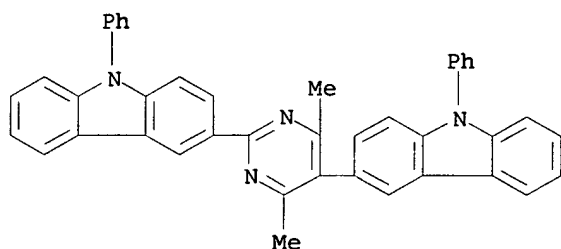
RN 663219-32-7 HCAPLUS

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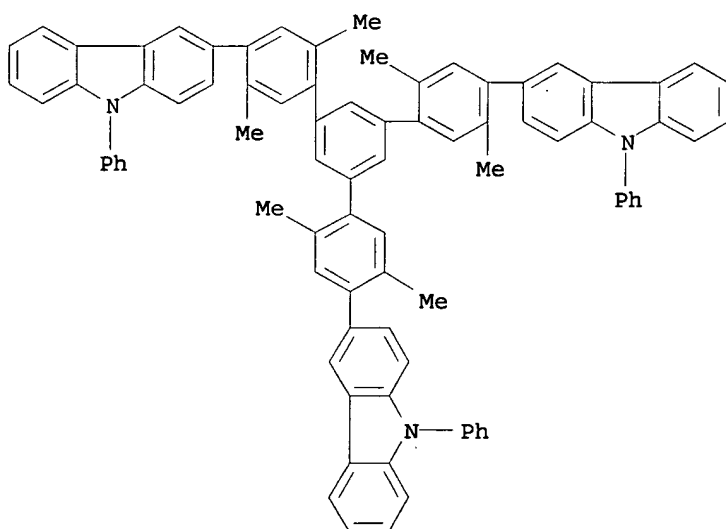
RN 663219-33-8 HCAPLUS

CN 9H-Carbazole, 3,3'-(4,6-dimethyl-2,5-pyrimidinediyl)bis[9-phenyl- (9CI) (CA INDEX NAME)]



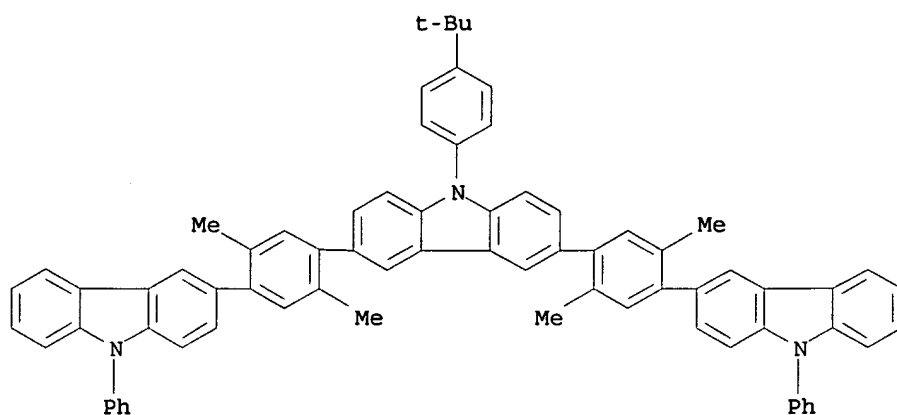
RN 663219-34-9 HCAPLUS

CN 9H-Carbazole, 3,3'-(5'-[2,5-dimethyl-4-(9-phenyl-9H-carbazol-3-yl)phenyl]-2,2'',5,5''-tetramethyl[1,1':3',1''-terphenyl]-4,4''-diyl)bis[9-phenyl- (9CI) (CA INDEX NAME)]



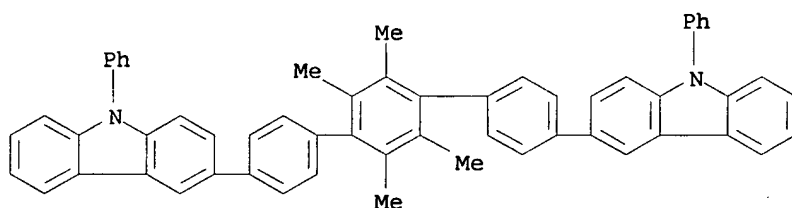
RN 663219-35-0 HCAPLUS

CN 9H-Carbazole, 9-[4-(1,1-dimethylethyl)phenyl]-3,6-bis[2,5-dimethyl-4-(9-phenyl-9H-carbazol-3-yl)phenyl]- (9CI) (CA INDEX NAME)]



RN 663219-36-1 HCAPLUS

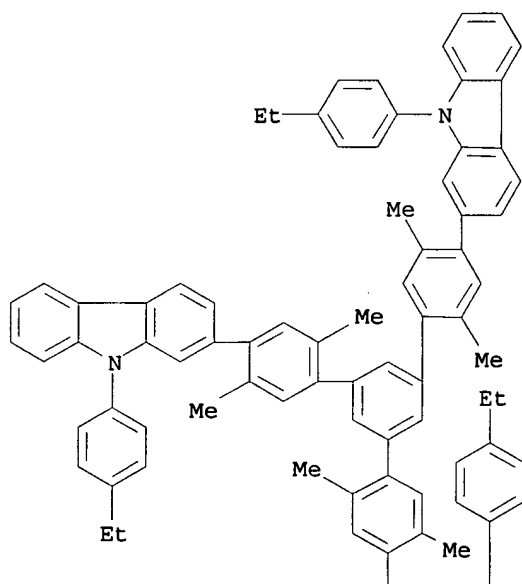
CN 9H-Carbazole, 3,3'-(2',3',5',6'-tetramethyl[1,1':4',1''-terphenyl]-4,4''-diyl)bis[9-phenyl- (9CI) (CA INDEX NAME)



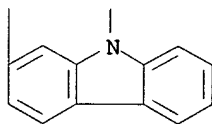
RN 663219-37-2 HCAPLUS

CN 9H-Carbazole, 2,2'-[5'-[4-[9-(4-ethylphenyl)-9H-carbazol-2-yl]-2,5-dimethylphenyl]-2,2'',5,5''-tetramethyl[1,1':3',1''-terphenyl]-4,4''-diyl]bis[9-(4-ethylphenyl)- (9CI) (CA INDEX NAME)

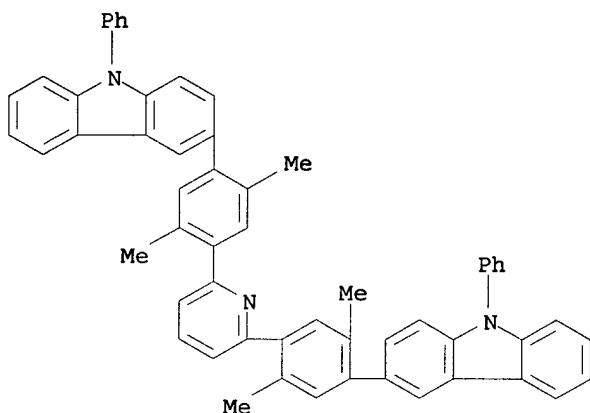
PAGE 1-A



PAGE 2-A

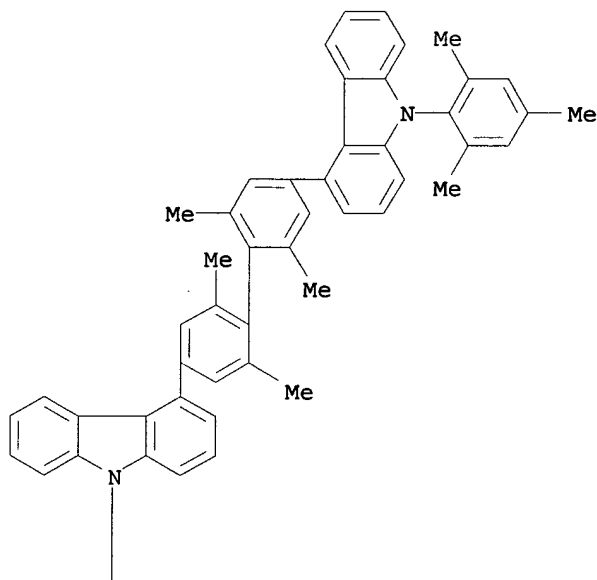


RN 663219-38-3 HCAPLUS
CN 9H-Carbazole, 3,3'-[2,6-pyridinediylbis(2,5-dimethyl-4,1-phenylene)]bis[9-phenyl- (9CI) (CA INDEX NAME)]

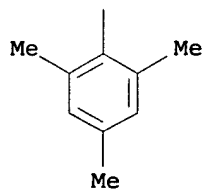


RN 663219-39-4 HCAPLUS
CN 9H-Carbazole, 4,4'-[(2,2',6,6'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)]bis[9-(2,4,6-trimethylphenyl)- (9CI) (CA INDEX NAME)]

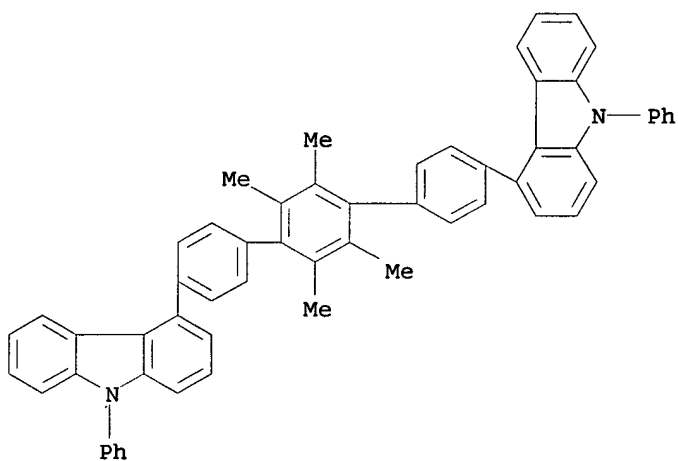
PAGE 1-A



PAGE 2-A

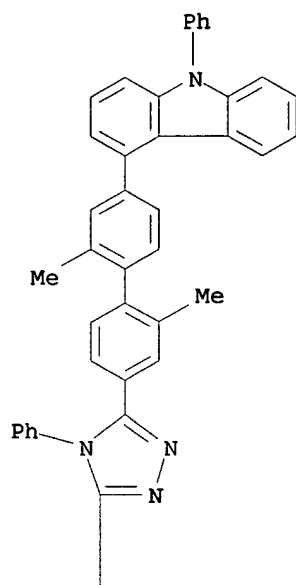


RN 663219-40-7 HCAPLUS
CN 9H-Carbazole, 4,4'-[2',3',5',6'-tetramethyl[1,1':4',1''-terphenyl]-4,4''-diyl]bis[9-phenyl- (9CI) (CA INDEX NAME)

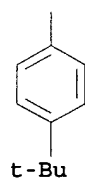


RN 663219-41-8 HCAPLUS
CN 9H-Carbazole, 4-[4'-[5-[4-(1,1-dimethylethyl)phenyl]-4-phenyl-4H-1,2,4-triazol-3-yl]-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

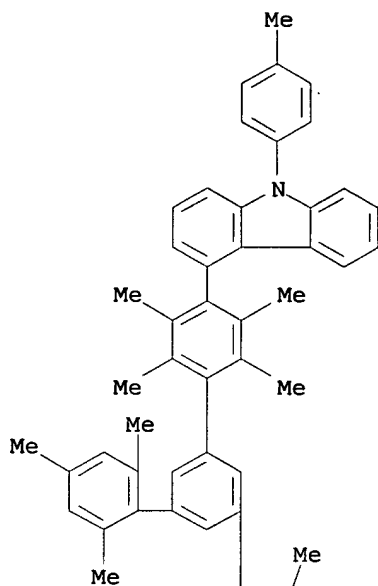


PAGE 2-A

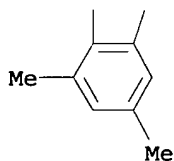


RN 663219-42-9 HCAPLUS
CN 9H-Carbazole, 4-[2,2'',3,4'',5,6,6''-heptamethyl-5'-(2,4,6-trimethylphenyl)[1,1':3',1''-terphenyl]-4-yl]-9-(4-methylphenyl)-(9CI) (CA INDEX NAME)

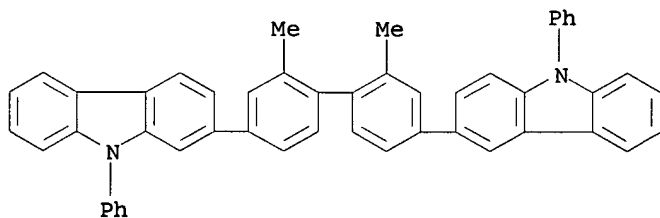
PAGE 1-A



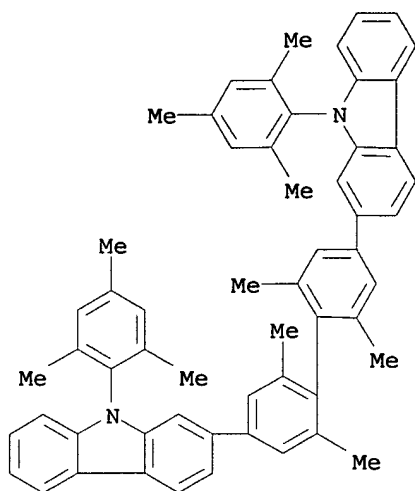
PAGE 2-A



RN 663219-43-0 HCAPLUS
 CN 9H-Carbazole, 2-[2,2'-dimethyl-4'-(9-phenyl-9H-carbazol-3-yl)[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)

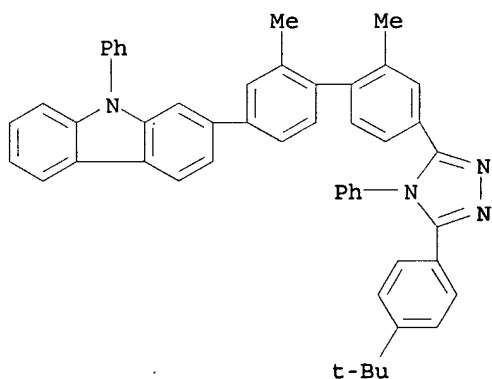


RN 663219-44-1 HCAPLUS
 CN 9H-Carbazole, 2,2'-(2,2',6,6'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis[9-(2,4,6-trimethylphenyl)- (9CI) (CA INDEX NAME)



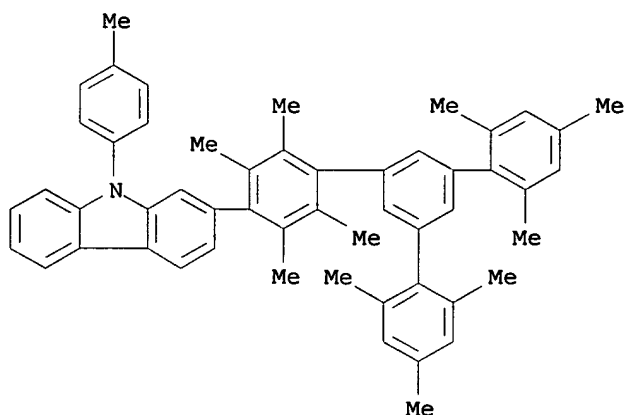
RN 663219-45-2 HCAPLUS

CN 9H-Carbazole, 2-[4'-[5-[4-(1,1-dimethylethyl)phenyl]-4-phenyl-4H-1,2,4-triazol-3-yl]-2,2'-dimethyl[1,1'-biphenyl]-4-yl]-9-phenyl- (9CI) (CA INDEX NAME)



RN 663219-46-3 HCAPLUS

CN 9H-Carbazole, 2-[2,2'',3,4'',5,6,6''-heptamethyl-5'-(2,4,6-trimethylphenyl)[1,1':3',1''-terphenyl]-4-yl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)

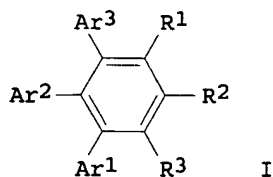


IC ICM H05B033-14
ICS C07D209-86; C07D215-04; C07D471-04; C09K011-06
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 27, 74
IT 663219-22-5 663219-23-6 663219-24-7
663219-25-8 663219-26-9 663219-27-0
663219-28-1 663219-29-2 663219-30-5
663219-31-6 663219-32-7 663219-33-8
663219-34-9 663219-35-0 663219-36-1
663219-37-2 663219-38-3 663219-39-4
663219-40-7 663219-41-8 663219-42-9
663219-43-0 663219-44-1 663219-45-2
663219-46-3
RL: DEV (Device component use); USES (Uses)
(org. electroluminescence device and its imaging
display employing phosphorescence and contg. carbazole)

L35 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:32963 HCAPLUS
DOCUMENT NUMBER: 140:102081
TITLE: Organic electroluminescent devices with improved brightness and durability and their displays
INVENTOR(S): Yamada, Taketoshi; Kita, Hiroshi
PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2004014334 | A2 | 20040115 | JP 2002-167083 | 20020607 |
| PRIORITY APPLN. INFO.: | | | | 20020607 |

OTHER SOURCE(S): MARPAT 140:102081
GI



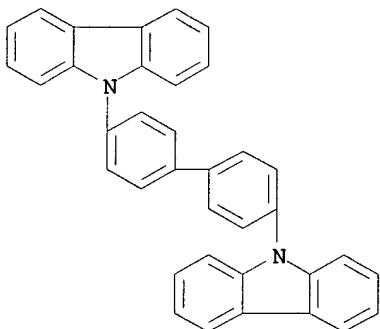
AB The org. EL device has a luminescent layer contg. phosphorescent compds. and host compds. of 1,2,3-triphenylbenzene derivs. represented by general formula I (Ar1-Ar3 = Ph which may be substituted; R1-R3 = H, substituent; R1-R3 = H, alkyl which may be substituted; adjacent R1-R3 may be bonded to each other and form ring). The phosphorescent compds. may comprise Ir compds., Os compds., or Pt compds.

IT 58328-31-7

RL: DEV (Device component use); USES (Uses)
(hole-transporting layer, **luminescent** layer; org. El displays device with **luminescent** layer contg. **phosphorescent** compds. and host compds. of 1,2,3-triphenylbenzene derivs.)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 74-12 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

IT 58328-31-7

RL: DEV (Device component use); USES (Uses)
(hole-transporting layer, **luminescent** layer; org. El displays device with **luminescent** layer contg. **phosphorescent** compds. and host compds. of 1,2,3-triphenylbenzene derivs.)

L35 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:656269 HCAPLUS

DOCUMENT NUMBER: 139:204831

TITLE: Organic electroluminescent devices with light-emitting layer contg. a phosphorescent compound and a host compound containing a boron atom in the molecule, and a display employing the organic electroluminescent devices

INVENTOR(S): Matsuura, Mitsunori; Yamada, Taketoshi; Kinoshita, Motoi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Corporation, Japan
 SOURCE: U.S. Pat. Appl. Publ., 26 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|------------|
| US 2003157366 | A1 | 20030821 | US 2002-281572 | 20021028 |
| US 6835473 | B2 | 20041228 | | |
| JP 2003234192 | A2 | 20030822 | JP 2002-334907 | 20021119 |
| PRIORITY APPLN. INFO.: | | | JP 2001-372601 | A 20011206 |

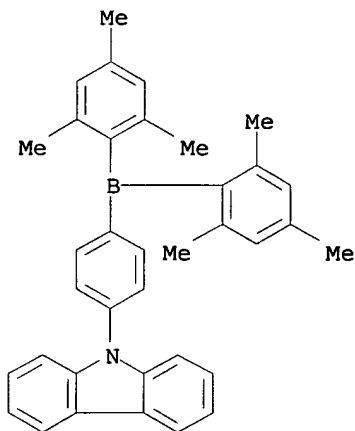
OTHER SOURCE(S): MARPAT 139:204831

AB Org. electroluminescent devices and a display employing the org. electroluminescent devices are described which comprise a light-emitting layer contg. a phosphorescent compd. and a host compd. contg. a boron atom in the mol.

IT 332350-52-4 332350-53-5 583040-41-9
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (host in light-emitting layer; org. **electroluminescent** devices with light-emitting layer contg. **phosphorescent** compd. and host compd. contg. boron atom in mol., and display employing **electroluminescent** devices)

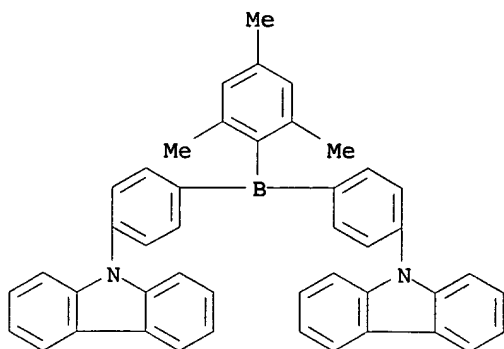
RN 332350-52-4 HCAPLUS

CN 9H-Carbazole, 9-[4-[bis(2,4,6-trimethylphenyl)boryl]phenyl]- (9CI)
 (CA INDEX NAME)

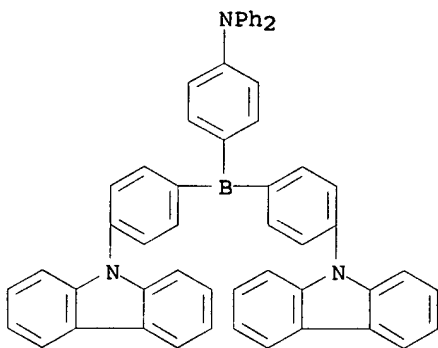


RN 332350-53-5 HCAPLUS

CN 9H-Carbazole, 9,9'-[[[(2,4,6-trimethylphenyl)borylene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



RN 583040-41-9 HCAPLUS
 CN Benzenamine, 4-[bis[4-(9H-carbazol-9-yl)phenyl]boryl]-N,N-diphenyl-
 (9CI) (CA INDEX NAME)



IC ICM H05B033-14
 INCL 428690000; 428917000; 313504000; 257102000; 257103000
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 22, 74, 76
 IT 38186-32-2 213621-16-0 300823-56-7 300823-57-8 301300-11-8
 332350-52-4 332350-53-5 492434-53-4
 492446-94-3 492446-97-6 492447-00-4 583040-29-3 583040-30-6
 583040-31-7 583040-32-8 583040-33-9 583040-34-0 583040-35-1
 583040-36-2 583040-37-3 583040-38-4 583040-39-5 583040-40-8
 583040-41-9 583040-42-0
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (host in light-emitting layer; org. **electroluminescent** devices with light-emitting layer contg. **phosphorescent** compd. and host compd. contg. boron atom in mol., and display employing **electroluminescent** devices)
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:39552 HCAPLUS
 DOCUMENT NUMBER: 138:247594
 TITLE: Realizing Green Phosphorescent Light-Emitting Materials from Rhenium(I) Pyrazolato Diimine Complexes

AUTHOR(S): Ranjan, Sudhir; Lin, Shen-Yi; Hwang, Kuo-Chu; Chi, Yun; Ching, Wei-Li; Liu, Chao-Shiuan; Tao, Yu-Tai; Chien, Chin-Hsiung; Peng, Shie-Ming; Lee, Gene-Hsiang

CORPORATE SOURCE: Department of Chemistry, National Tsing Hua University, Hsinchu, 30013, Taiwan

SOURCE: Inorganic Chemistry (2003), 42(4), 1248-1255
CODEN: INOCAJ; ISSN: 0020-1669

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

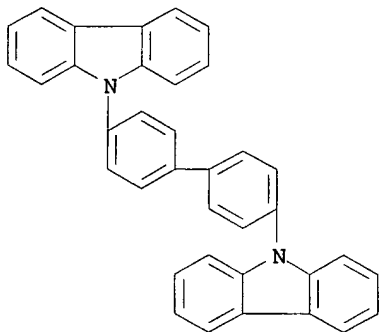
OTHER SOURCE(S): CASREACT 138:247594

AB Two neutral pyrazolato diimine Re(I) carbonyl complexes [Re(CO)₃(N-N)(btpz)] where N-N = 2,2'-bipyridine (1) and 1,10-phenanthroline (2), and btpz = 3,5-bis(trifluoromethyl)pyrazolate, were synthesized and characterized by elemental anal., routine spectroscopic methods, and single-crystal x-ray diffraction study. Ground and excited state properties of these complexes were studied by steady-state and time-resolved spectroscopies. Complexes 1 and 2 show photoluminescent emission in both soln. and solid-state at room temp., arising from metal-to-ligand charge-transfer (MLCT) transition with strong overlapping of intraligand $\pi \rightarrow \pi^*$ transitions. The long-lived excited state lifetimes of complexes 1 and 2, which are on the order of microseconds, indicate phosphorescent emission. As these complexes hold the potential to serve as phosphors for org. light-emitting diodes (OLEDs), their electroluminescent performances were evaluated by employing them as dopants of various electron transport layer (ETL) or hole transport layer (HTL) hosts. For complex 1, a green electrophosphorescence emission centered at $\lambda_{\text{max}} = 530$ nm was obsd. at low turn-on voltage (.apprx.6 V) with luminous power efficiency of 0.72 lm/W, external quantum efficiency of 0.82%, and luminance of 2300 cd/m² at a c.d. of 100 mA/cm².

IT 58328-31-7
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(host material for rhenium(I) pyrazolato diimine carbonyl phosphorescent dopants in OLED device)

RN 58328-31-7 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 72, 73, 74, 75

IT 58328-31-7 192198-85-9
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(host material for rhenium(I) pyrazolato diimine carbonyl phosphorescent dopants in OLED device)

REFERENCE COUNT: 84 THERE ARE 84 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L35 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:221136 HCAPLUS
DOCUMENT NUMBER: 136:254380
TITLE: Organometallic complexes as phosphorescent
emitters in organic LEDs
INVENTOR(S): Thompson, Mark E.; Djurovich, Peter; Lamansky,
Sergey; Murphy, Drew; Kwong, Raymond;
Abdel-Razzaq, Feras; Forrest, Stephen R.; Baldo,
Marc A.; Burrows, Paul E.
PATENT ASSIGNEE(S): The Trustees of Princeton University, USA; The
University of Southern California
SOURCE: U.S. Pat. Appl. Publ., 77 pp., Cont.-in-part of
U. S. Ser. No. 274,609, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| US 2002034656 | A1 | 20020321 | US 2001-883734 | 20010618 |
| US 6830828 | B2 | 20041214 | | |
| US 6097147 | A | 20000801 | US 1998-153144 | 19980914 |
| US 2003017361 | A1 | 20030123 | US 2002-171235 | 20020613 |
| US 6902830 | B2 | 20050607 | | |
| US 2004262576 | A1 | 20041230 | US 2004-870788 | 20040616 |
| US 7001536 | B2 | 20060221 | | |
| JP 2005344124 | A2 | 20051215 | JP 2005-241794 | 20050823 |
| US 2006029829 | A1 | 20060209 | US 2005-233605 | 20050922 |
| PRIORITY APPLN. INFO.: | | | US 1998-153144 | A2 19980914 |
| | | | US 1999-274609 | B2 19990323 |
| | | | US 1999-311126 | B2 19990513 |
| | | | US 1999-452346 | B2 19991201 |
| | | | JP 2001-541304 | A3 20001129 |

| | | |
|----------------|----|--------------|
| US 2001-883734 | A3 | 200106 18 |
| US 2002-171235 | A3 | 200206 13 |
| US 2004-870788 | A1 | 200406 16 |

OTHER SOURCE(S): MARPAT 136:254380

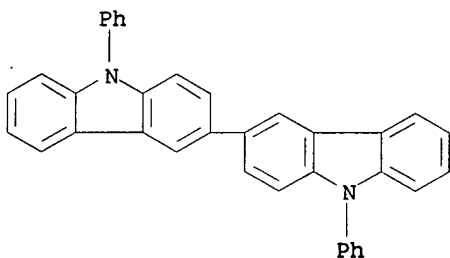
AB Emissive layers of org. light-emitting devices are described which comprise a phosphorescent organometallic compd. for enhancing the quantum efficiency of the org. light-emitting device. Preferably the emissive mol. is selected from the group of phosphorescent organometallic complexes, including cyclometallated platinum, iridium, and osmium complexes. The org. light-emitting devices optionally contain an exciton blocking layer. In particular, org. light-emitting devices with an emitter layer comprising organometallic complexes of transition metals of formula L2MX, wherein L and X are distinct bidentate ligands and M is a metal which forms octahedral complexes, are described. A method of making a compn. of the formula L2MX is described which entails combining a bridged dimer of formula L2M(μ -Cl)2ML2 with a Bronsted acid XH to make the desired organometallic complex. Display devices incorporating the light-emitting devices are also described.

IT 57102-62-2D, derivs. 58328-31-7
58328-31-7D, derivs. 212385-75-6D, derivs.
344406-74-2D, derivs.

RL: DEV (Device component use); USES (Uses)
(organometallic complexes and their prepn. and org.
light-emitting devices using them as **phosphorescent**
emitters)

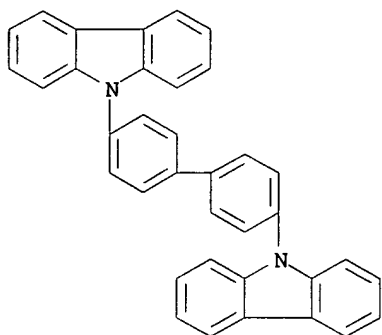
RN 57102-62-2 HCAPLUS

CN 3,3'-Bi-9H-carbazole, 9,9'-diphenyl- (9CI) (CA INDEX NAME)

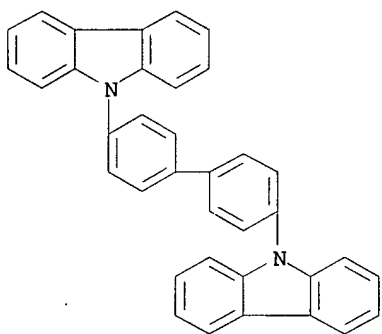


RN 58328-31-7 HCAPLUS

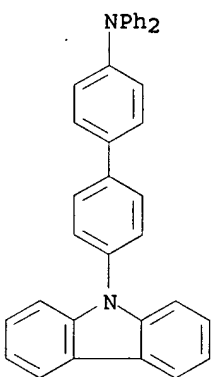
CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



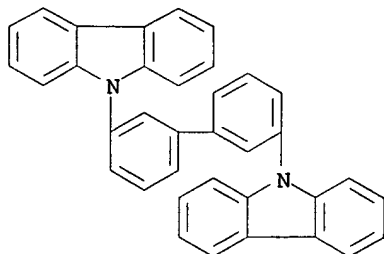
RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 212385-75-6 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-diphenyl- (9CI) (CA INDEX NAME)



RN 344406-74-2 HCAPLUS
 CN 9H-Carbazole, 9,9'-(ar,ar'-dimethyl[1,1'-biphenyl]-3,3'-diyl)bis[dimethyl- (9CI) (CA INDEX NAME)



6 (D1-Me)

IC ICM H05B033-14
ICS C09K011-06

INCL 428690000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76, 78

IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5,
2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 7440-04-2D, Osmium,
compds. with org. ligands 9003-53-6, Polystyrene 25067-59-8,
Polyvinylcarbazole 57102-62-2D, derivs. 58328-31-7
58328-31-7D, derivs. 88821-71-0 94928-86-6,
fac-Tris(2-phenylpyridine)iridium 123847-85-8,
4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 180971-61-3
212385-75-6D, derivs. 344406-74-2D, derivs.

RL: DEV (Device component use); USES (Uses)
(organometallic complexes and their prepn. and org.
light-emitting devices using them as **phosphorescent**
emitters)

REFERENCE COUNT: 170 THERE ARE 170 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L35 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:417332 HCAPLUS

DOCUMENT NUMBER: 135:53380

TITLE: Complexes of form L2MX as phosphorescent dopants
for organic LEDs

INVENTOR(S): Thompson, Mark E.; Djurovich, Peter; Lamansky,
Sergey; Murphy, Drew; Kwong, Raymond;
Abdel-Razzaq, Feras; Forrest, Stephen R.; Baldo,
Marc A.; Burrows, Paul E.

PATENT ASSIGNEE(S): Trustees of Princeton University, USA;
University of Southern California

SOURCE: PCT Int. Appl., 88 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| WO 2001041512 | A1 | 20010607 | WO 2000-US32511 | 200011 29 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH,

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
 LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ,
 PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ,
 UA, UG, UZ, VN, YU, ZA, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD,
 TG

EP 1252803 A1 20021030 EP 2000-980863 200011
 29

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 JP 2003515897 T2 20030507 JP 2001-541304 200011
 29

TW 581762 B 20040401 TW 2000-89125494 200011
 30

JP 2005344124 A2 20051215 JP 2005-241794 200508
 23

PRIORITY APPLN. INFO.: US 1999-452346 A 199912
 01

JP 2001-541304 A3 200011
 29

WO 2000-US32511 W 200011
 29

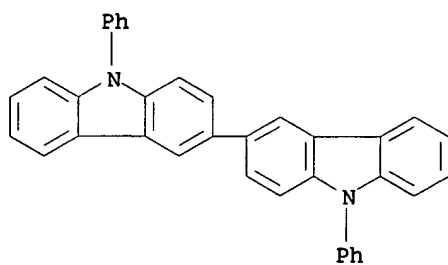
OTHER SOURCE(S): MARPAT 135:53380

AB Org. light-emitting devices are described in which an emitter layer
 comprises compds. (e.g., as dopants within a host) which are
 described by the general formula L2MX (L and X are inequivalent
 bidentate ligands; and M is a metal which forms octahedral
 complexes). Devices with emitter layers comprising phosphorescent
 compds. described by the general formula LL'L"M (L, L', and L" =
 inequivalent bidentate ligands) and comprising L'''2M (L''' = a
 monoanionic bidentate ligand coordinated to M through an sp2 carbon
 and a heteroatom; and wherein the heteroatoms of the two L ligands
 are in a trans configuration) are also described. The prepn. of
 L2MX by combining a bridged dimer described by the general formula
 L2M(μ -Cl)2ML2 with a Bronsted acid XH to make an organometallic
 complex of formula LMX is also described. Synthetic options allow
 insertion of fluorescent mols. into a phosphorescent complex,
 ligands to fine tune the color of emission, and ligands to trap
 carriers. 3-Methoxy-2-phenylpyridine.

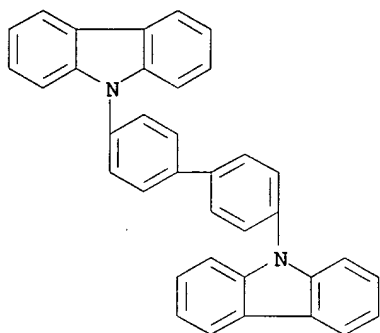
IT 57102-62-2D, derivs. 58328-31-7
 58328-31-7D, derivs. 212385-75-6D, derivs.
 344406-74-2D, derivs.

RL: DEV (Device component use); USES (Uses)
 (phosphorescent cyclometallated complex dopants for
 org. light-emitting devices and their prepn.)

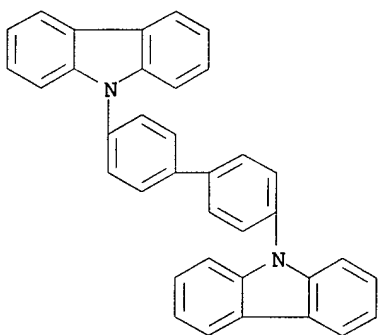
RN 57102-62-2 HCAPLUS
 CN 3,3'-Bi-9H-carbazole, 9,9'-diphenyl- (9CI) (CA INDEX NAME)



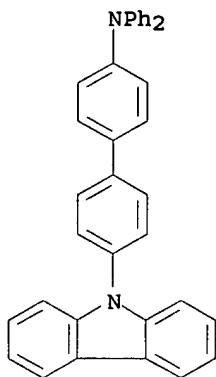
RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



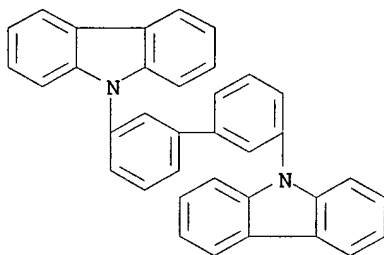
RN 58328-31-7 HCAPLUS
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis- (9CI) (CA INDEX NAME)



RN 212385-75-6 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 4'-(9H-carbazol-9-yl)-N,N-diphenyl- (9CI)
 (CA INDEX NAME)



RN 344406-74-2 HCAPLUS
 CN 9H-Carbazole, 9,9'-(ar,ar'-dimethyl[1,1'-biphenyl]-3,3'-diyl)bis(dimethyl- (9CI) (CA INDEX NAME)



6 (D1-Me)

IC ICM H05B033-14
 ICS C07D213-02; C07D215-02; C07D231-12; C07D263-57; C07D277-66;
 C07D333-50; C07D409-04; C07D417-04
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 29, 74, 76, 78
 IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5,
 Bathocuproine 7440-04-2D, Osmium, compds. with org. ligands, uses
 7440-06-4D, Platinum, compds. with org. ligands, uses 37271-44-6
 50926-11-9, Indium tin oxide 57102-62-2D, derivs.
 58328-31-7 58328-31-7D, derivs.
 212385-75-6D, derivs. 344406-74-2D, derivs.
 RL: DEV (Device component use); USES (Uses)
 (phosphorescent cyclometallated complex dopants for
 org. light-emitting devices and their prepn.)
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

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